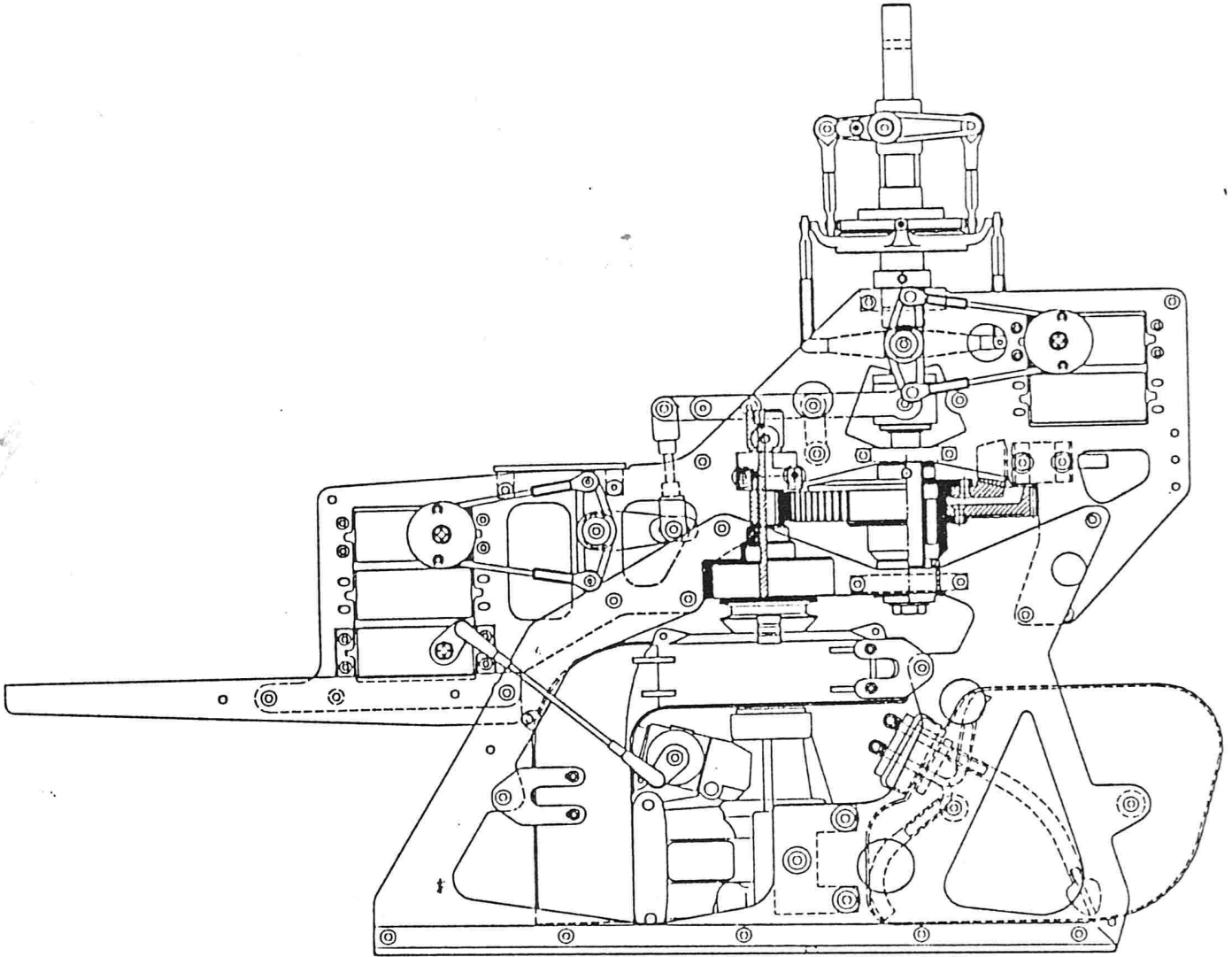


OMEGA-PRO GRAND PRIX



INSTRUCTION MANUAL



David Kowalski
HPI
949-753-1099

OMEGA PRO GRAND PRIX

SPECIFICATIONS

MAIN ROTOR DIAMETER 1560MM
OVERALL LENGTH 1400MM
GROSS WEIGHT 4.6 - 4.7 Kgs
ENGINE 60 SIZE
R/C SYSTEM 5 CHANNEL
MECHANICS PRO GRAND PRIX
GEAR RATIO (ENGINE:MAIN ROTOR:TAIL ROTOR) ...9.78:1:5.52
FUEL TANK CAPACITY 470cc

DISTRIBUTED BY HORIZON HOBBY DISTRIBUTORS

PRIOR TO BEGINNING CONSTRUCTION:

The construction of this kit is divided into A-1 thru B-4 sections. The parts bags and screw sets are numbered according to the section in which they are assembled. Open only the bag required for the section you are constructing, in order to avoid any possibility of mixing up the parts to different sections.

ADDITIONAL EQUIPMENT REQUIRED TO CONSTRUCTION AND FLYING YOUR OMEGA-PRO GRAND PRIX.

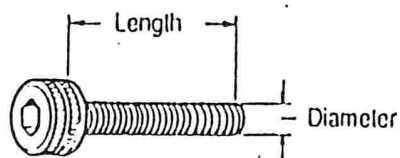
- * 5 or more channel R/C equipment for helicopter.
Servo frames included in this kit will accept standard size servos. You cannot install large or special-shaped servos.
- * Gyro - OMEGA-PRO GRAND PRIX can be flown without gyro, however, we recommended that you install a gyro for easier operation.
- * Engine - 60 - 61 cu.in.
- * Muffler - We recommend the Kalt muffler (KLTO1000688) or (KLTO1000638) for OMEGA-PRO.
- * Main Rotor Blades - 680mm.
- * Tail Rotor Blades.
- * Engine starting equipment (Electric starter, batteries, etc.).
- * Additional tools, etc.
Phillips screwdriver (small and large)
5.5mm nut driver
Pliers with cutters
Standard screwdriver (small)
Knife
File
Tapered reamer
Vinyl tape
Cyanoacrylate adhesives and Kalt tite
Clips (paper clips or clothes pins)
Kalt Precision Pitch Gauge
Additionally, Kalt Universal Ball Link Pliers (KLTO0020086) and Ball Link Driver (KLTO0020076) are recommended.

NUT AND BOLT DISCRPTIONS

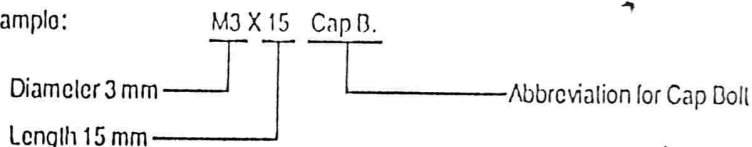
Nuts and bolts (screws) used during construction are identified as follows:

* CAP BOLT (SCREW)

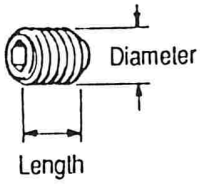
It has a hexagonal hole in the head. Tighten with the hex wrench supplied.



Example:

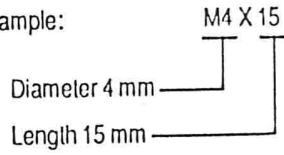


- Set Bolt (Grub Screw)
(Set screw)



It has a hexagonal hole in the end, but no head.

Example:



Set B.

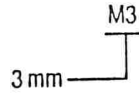
Abbreviation for Set Bolt

- Self-Locking nut (Locknut)
(Nylon nut)



It has a nylon insert in the center of the nut.

Example:

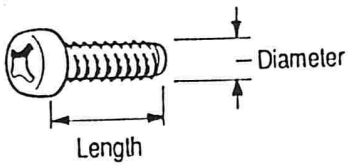


N.N.

Abbreviation for Nylon Nut

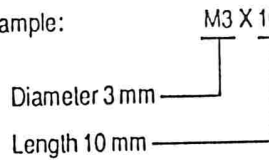
Use the 5.5 mm box wrench to tighten the M3 nuts.

- Tap Tite (tapping screw)



These are special self-tapping screws for plastic parts. Do not enlarge the existing holes. They must be a tight fit..

Example:



Tap T.

Abbreviation for Tap Tite

- Phillips Bolt
(Phillips screw)



These are pan head Phillips Screws. Use a suitable size screw driver for tightening.

- Serrated Lock Washer
(serrated washer)



These are lock washers with gripping teeth around the edges.

* All of nuts, bolts(screws), and washers are called out by number as explained.

* Use of hexagon wrenches.

This kit contains 4 sizes of hex wrenches. Use for tightening cap and set bolts (screws) as follows:

| Dia. | Cap Bolts | Set Bolts |
|------|-----------|-----------|
| M3 | 2.5 mm | 1.5 mm |
| M4 | 3.0 mm | 2.0 mm |

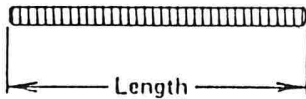
The necessary nuts, bolts (screws), and washers needed to each construction step are summarized at the end of that step. Be careful to use only the parts that are listed, as all of the nuts, bolts (screws), and washers provided will be used.

Example: M3X8 CAP SCREW[X4] USE 4 M3x8 cap screws.

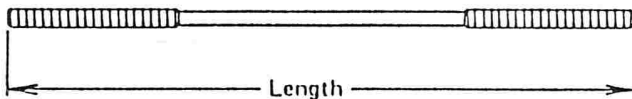
THREADED RODS:

Threaded rods used for linkages are identified as follows:

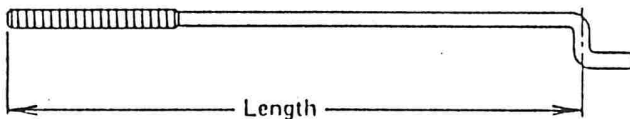
- All threaded rod



- Both ends threaded



- Crankrod



OMEGA-PRO GRAND PRIX PARTS LIST

| <u>TO</u> | <u>NUMBER</u> | <u>DESCRIPTION</u> | <u>QTY</u> | <u>STOCK NUMBER</u> | <u>DESCRIPTION</u> | <u>QTY</u> |
|-----------------|---------------|------------------------------|------------|---------------------|----------------------------------|-------------|
| <u>STEP A-1</u> | | | | <u>STEP A-3</u> | | |
| | 71004 | BEVEL PINION GEAR (71004) | 1 | 71065 | BEVEL GEAR |] 1 SET |
| | 71016 | TAPER COLLET | 1 | 71062 | ONE-WAY HOUSING ASS'Y | |
| | 71031 | TAPER NUT(OS)FOR STARTER | 1 | | ONE-WAY SHAFT |] ASSEMBLED |
| | 71032 | TAPER NUT(YS)FOR STARTER | 1 | 71063 | BEVEL SUPPORT |] |
| | 71033 | TAPER NUT(ENYA)FOR STARTER | 1 | 71064 | MAIN SPUR GEAR | |
| | 71044 | FAN W/M3,4 SCREW HOLES) | 1 | 72004 | SHAFT SCREW & WASHER | 1 EA |
| | 71045 | CLUTCH BELL ASSEMBLY | 1 | 72006 | MAIN SHAFT | 1 |
| | 71047 | STARTER SHAFT | 1 | 72007 #1 | OUTER SHAFT ASS'Y | 1 |
| | 71052 | STARTER CLUTCH ASSEMBLY | 1 | 74017 | SLIDE RING ASS'Y | 1 |
| | 71053 | STARTER HEX | 1 | 74021 | SISSOR ARM ASS'Y | 1 |
| | 71056 | MOTOR MOUNT | 1 | 74027 | ROD END BODY ASS'Y | 1 |
| | 71057 | CLUTCH SHOE | 2 | 74034 | SWASH PLATE ASS'Y | 1 |
| | 74038 | PITCH LEVER A ASS'Y | 2 | 74037 #2 | PITCH ROD | 2 |
| | 74039 | PITCH LEVER B | 1 | 76025 | TOP BEARING CASE ASS'Y | 1 |
| | 74040 | PITCH LINK ASS'Y | 2 | 1002-064-6 | THRUST BEARING | 1 |
| | 74041 | PITCH LINK ROD | 1 | | | |
| | 74042 | PITCH LEVER C | 1 | | | |
| | 74046 | PITCH LINK PIN | 2 | <u>STEP A-4</u> | | |
| | 74048 | ELEVATOR ARM ASS'Y | 1 | 71010 | FAN COVER (LEFT & RIGHT) | 1 EA |
| | 74050 | CONNECTING LINK | 1 | 71013 | FAN COVER BRACKET (F,R) | 2 EA |
| | 74051 | PITCH LEVER SHAFT(A,B) | 1 EA | 76052 | CROSSMEMBER 62 | 2 |
| | 76022 | BEVEL BEARING CASE ASS'Y | 1 | | | |
| | 76050 | GYRO PLATE | 1 | <u>STEP A-5</u> | | |
| | 76055 | PINION BEARING CASE ASS'Y | 1 | 74001 | SERVO SET PLATE | 10 |
| | 76059 | GYRO BRACKET | 2 | 74030 | T LEVER ASS'Y | 1 |
| 102-102-8 | | PINION GEAR T-9 FOR STARTER | 1 | 74047 | JOINT LEVER | 2 |
| 102-059-6 | | L740ZZ BEARING | 4 | | | |
| | | BARREL ADJ SCREW FOR OS ENG1 | | <u>STEP A-6</u> | | |
| | | | | 74049 | ROD | 6 |
| | | | | | DRILLING GAUGE FOR SERVO HORN | 1 |
| <u>STEP A-2</u> | | | | <u>STEP A-7</u> | | |
| | 76003 | LOWER CROSSMEMBER | 1 | 75001 | FUEL TANK | 1 |
| | 76004 | MIDDLE CROSSMEMBER | 1 | 75002 | FUEL TANK DAMPER | 4 |
| | 76019 | SUB-FRAME(L,R) | 1 EA | 76005 | END CROSSMEMBER | 1 |
| | 76027 | BEARING HOLDER ASS'Y | 1 | 76016 | UPPER BODY BRACKET | 2 |
| | 76044 | FRONT BED | 1 | 76017 | LOWER BODY BRACKET | 1 |
| | 76048 | UPPER FRAME(L,R) | 1 EA | 76031 | UPPER BRACKET EXTENSION | 2 |
| | 76046 | LOWER FRAME | 2 | 0500-001-7 | FUEL FILTER | 1 |
| | 76047 | REINFORCEMENT ANGLE(L,R) | 1 EA | 0500-005-8 | FUEL STOPPER | 2 |
| | 76051 | FRONT CROSSMEMBER | 1 | 0501-015-6 | SILICON TUBE (L) | 1 |
| | 76052 | CROSSMEMBER 62 | 2 | 0501-024-8 | TANK CAP | 1 |
| | 76053 | CROSSMEMBER 13 | 10 | " | BRASS PIPE (L=1,M=2) FOR TANK | 1 SET |
| | 76054 | CROSSMEMBER 32 | 11 | " | TANK WASHER W/ SCREW & W/O SCREW | 1 EA |
| | 76065 | CROSSMEMBER 11.5 | 4 | " | TANK WEIGHT & SILICON TUBE(S) | 1 EA |

| <u>STOCK NUMBER</u> | <u>DESCRIPTION</u> | <u>QTY</u> | <u>STOCK NUMBER</u> | <u>DESCRIPTION</u> | <u>QTY</u> |
|---|----------------------------|------------|---------------------|-------------------------|------------|
| ALL LISTED PARTS ARE ADDITIONAL PARTS FOR FULL KIT. | | | | | |
| <u>STEP B-1</u> | | | <u>STEP B-3</u> | | |
| 06003 | LANDING DAMPER | 4 | 76056 | GRAND PRIX BODY SET | 1 |
| 06008 | WHITE LANDING GEAR SKID | 2 | 76057 | CANOPY | 1 |
| 06009 | WHITE LANDING GEAR BRACE | 2 | 76058 | BODY MOUNTING SCREW | 4 |
| 06010 | WHITE LANDING GEAR CAP | 4 | | | |
| <u>STEP B-2</u> | | | <u>STEP B-4</u> | | |
| 04001 | PP ROD WITH PIANO WIRE | 1 SET | 02004 | STABILIZER BLADE | 1 SET |
| 06001 | PP ROD GUIDE | 1 SET | 02005 | STABILIZER BAR | 1 |
| 06004G | HORIZONTAL/VERTICAL FINS | 1 EA | 0207-004-8 | BLACK-10S II ROTOR HEAD | 1 SET |
| " | TAIL FIN SPACER | 4 | 0200-017-8 | STABILIZER STOPPER | 2 |
| RV01052 | TUBE DRIVE ASS'Y | 1 | 0207-029-7 | BLADE GRIP SPACER | 4 |
| | | | 0207-036-8 | CONTROL LEVER | 1 |
| 73001 | INSIDE TAIL GEAR ASS'Y | 1 | | | |
| 73018 | TAIL GEAR SUPPORT | 2 | | | |
| 76061 | TAIL BOOM | 1 | <u>ACCESSORIES</u> | | |
| 76062 | TAIL SUPPORTER PIPE | 2 | 71055 | HEX STARTING SHAFT | 1 |
| 76067 #1 | TAIL BOOM SUPPORTER | 2 | 0001-002-8 | KALTTITE | 1 |
| 00-011-8 | TAIL PITCH HOUSING W/ARM | 2 | | DECAL SET | 1 |
| " | TAIL PITCH HOUSING W/O ARM | 2 | | SCREW SET | 1 |
| " | SPACER | 2 | | PRO-GRAND PRIX INST. | 1 |
| " | OUTER SPACER | 2 | | BLACK-10S II INST. | 1 |
| " | 1030ZZ BEARING | 4 | | | |
| 01-08-7 | TAIL SUPPORTER END | 4 | | | |
| 01-131-7 | SUS TAIL CLAMP | 1 | | | |
| 01-137-6 | SUS TAIL SUPPORTER CLAMP | 1 | | | |

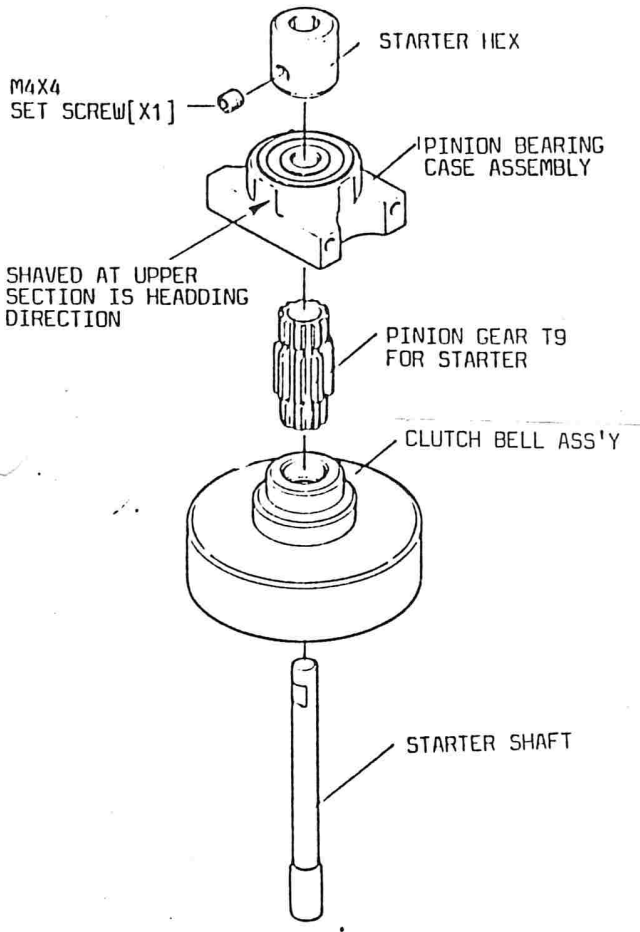
OMEGA-PRO GRAND PRIX SCREW SET BAGS LIST

| BAG NO. | CONTENTS | QTY | BAG NO. | CONTENTS | QTY. |
|----------|---------------------------|-----|---|----------------------------|------|
| STEP A-1 | M3X8 CAP SCREW | 2 | STEP A-7 | M3X6 CAP SCREW | 4 |
| | M4X15 CAP SCREW | 4 | | M3X8 CAP SCREW | 8 |
| | M3X8 FLAT CAP SCREW | 8 | | M4X22 CAP SCREW | 1 |
| | M4X8 SPECIAL CAP SCREW | 2 | | M3X12 SET SCREW | 2 |
| | M4X4 SET SCREW | 1 | | M3 NYLON NUT | 2 |
| | M4 FLAT WASHER | 4 | | M3 SERRATED WASHER | 4 |
| | M4 SERRATED WASHER | 4 | ----- | | |
| | M2 E-RING | 4 | FOLLOWING ARE ADDITIONAL SCREW BAGS FOR FULL KIT. | | |
| | M2.3X17 THREADED ROD | 2 | STEP B-1 | M3X6 CAP SCREW | 4 |
| | UNIVERSAL LINK | 2 | | M3X12 CAP SCREW | 4 |
| | M1.5 HEX WRENCH | 1 | | M4X4 SET SCREW | 4 |
| | M2 HEX WRENCH | 1 | | M3 FLAT WASHER | 4 |
| | M2.5 HEX WRENCH | 1 | | M3 SERRATED WASHER | 4 |
| | M3 HEX WRENCH | 1 | ----- | | |
| STEP A-2 | M3X8 CAP SCREW | 34 | STEP B-2 | M2.6X8 CAP SCREW | 4 |
| | M3X10 CAP SCREW | 4 | | M3X10 CAP SCREW | 2 |
| | M3X22 CAP SCREW | 2 | | M3X12 CAP SCREW | 2 |
| | M3X25 CAP SCREW | 12 | | M3X15 CAP SCREW | 2 |
| | M3X40 CAP SCREW | 1 | | M3X18 CAP SCREW | 3 |
| | M4X12 CAP SCREW | 6 | | M3X25 CAP SCREW | 2 |
| | M3X8 CAP SCREW | 5 | | M3X35 CAP SCREW | 4 |
| | M3 NYLON NUT | 11 | | M3X40 CAP SCREW | 2 |
| | M3 FLAT WASHER | 8 | M3X3 | SET SCREW | 6 |
| | M4 FLAT WASHER | 6 | | M4X4 SET SCREW | 8 |
| | M4 SERRATED WASHER | 6 | | M2X10 PHILLIPS SCREW | 8 |
| ----- | | | | M2X10 PHILLIPS SCREW | 2 |
| STEP A-3 | M3X8 CAP SCREW | 5 | | M3 NYLON NUT | 19 |
| | M3X15 CAP SCREW | 2 | | M2 NUT | 10 |
| | M3X8 FLAT CAP SCREW | 1 | | M3 NUT | 1 |
| | M3X3 SET SCREW | 2 | | M3 FLAT WASHER | 10 |
| | UNIVERSAL LINK | 2 | | QUICK LINK | 1 |
| | * M4X6 SET SCREW | 8 | | JOINT BALL | 2 |
| ----- | | | ----- | | |
| STEP A-4 | M3X10 CAP SCREW | 4 | STEP B-3 | M3X8 CAP SCREW | 2 |
| | M2.6X8 TAPPING SCREW | 4 | | M3X12 CAP SCREW | 4 |
| | M2.6X10 TAPPING SCREW | 8 | | M3X15 SET SCREW | 2 |
| | M3 FLAT WASHER | 4 | | M2.3X5 TAPPING SCREW | 4 |
| ----- | | | | M3 FLAT WASHER | 8 |
| STEP A-5 | M2.6X10 CAP SCREW | 20 | | RUBBER GROMMET | 4 |
| | M3X8 CAP SCREW | 4 | ----- | | |
| | M3X18 CAP SCREW | 1 | STEP B-4 | M3X22 CAP SCREW | 1 |
| | M3X4.5X.05 FLAT WASHER | 1 | | M4X32 CAP SCREW | 2 |
| | M3X10X1 FLAT WASHER | 4 | | M3X3 SET SCREW | 4 |
| ** | NYLON STRAP | 2 | | M4X4 SET SCREW | 1 |
| ** | M2 FLAT WASHER | 7 | | M3 NYLON NUT | 1 |
| ** | SUPER JOINT BALL B | 7 | | M4 NYLON NUT | 2 |
| ----- | | | | M2.3X17 THREADED ROD | 2 |
| STEP A-6 | M1.5 E-RING | 6 | | M2.3X70 ENDS THREADED ROD | 2 |
| | M2.3X50 THREADED ROD | 1 | | M2.3X110 ENDS THREADED ROD | 1 |
| | M2.3X70 ENDS THREADED ROD | 1 | | UNIVERSAL LINK | 10 |
| | UNIVERSAL LINK | 8 | * | M5X8 SPECIAL SET SCREW | 2 |
| | QUICK LINK | 3 | * | M4 NYLON NUT | 2 |
| ----- | | | ----- | | |

Marked * items are equipped with parts. Marked ** items are supplied with separate bags.

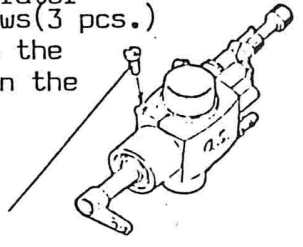
A1-1

The pinion is designed to screw into the clutch bell. Before assembling, apply a small amount of Kalttite to the threads. Now install the pinion gear upper part to the pinion bearing case. Insert the starter shaft into the bottom of the pinion gear bearing case. Make sure that the pinion gear is fully seated into the bottom bearing of the bearing case. Place the starter hex onto the starter shaft from the top and secure using (2) M4X4 set screws and Kalttite.



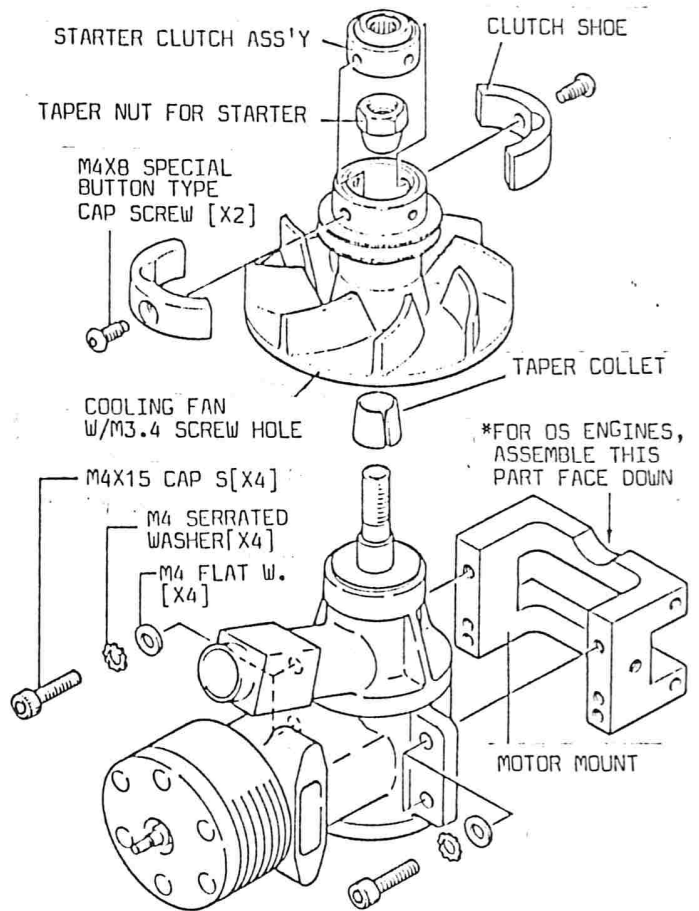
When using OS Engine

* Remove the carburetor barrel stop screws (3 pcs.) and replace with the screw supplied in the kit.



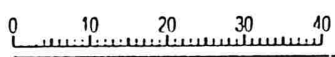
MOTOR ADJUSTING SCREW[X1]

A1-2



Remove the prop drive hub from the engine crankshaft and install the split tapered collet in its place. Install the fan assembly onto the tapered collet and secure with the tapered nut supplied. Next install clutch shoes and starter clutch assembly onto the flywheel assembly. At this time apply a small amount of grease to the oneway bearing in the starter clutch.

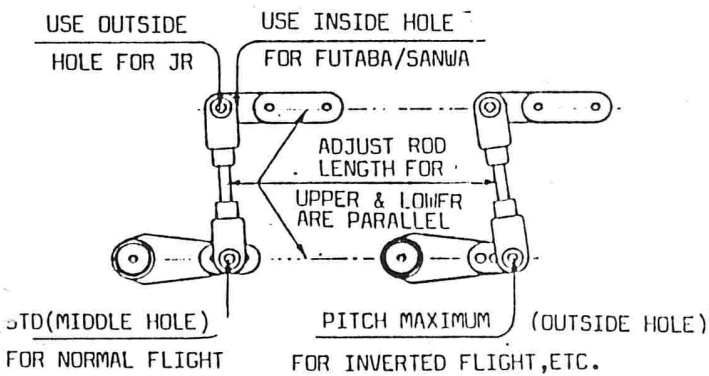
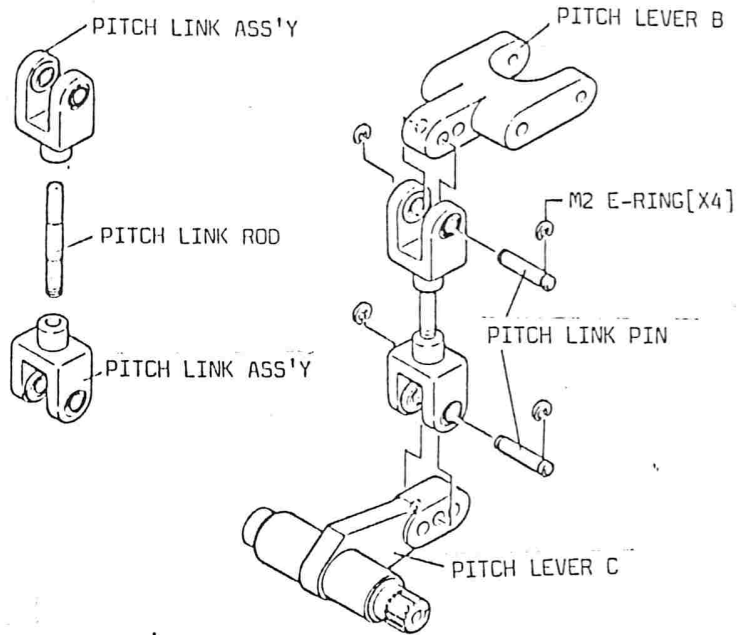
Temporarily install the engine to the motor mount. When you use OS Engine, the motor mount notch is face down.



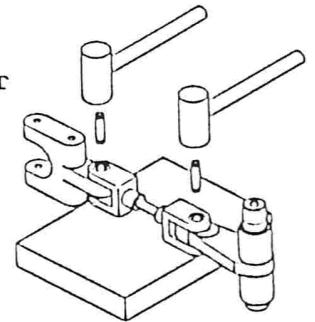
STEP A-1 PARTS PRE-ASSEMBLING

A1-3

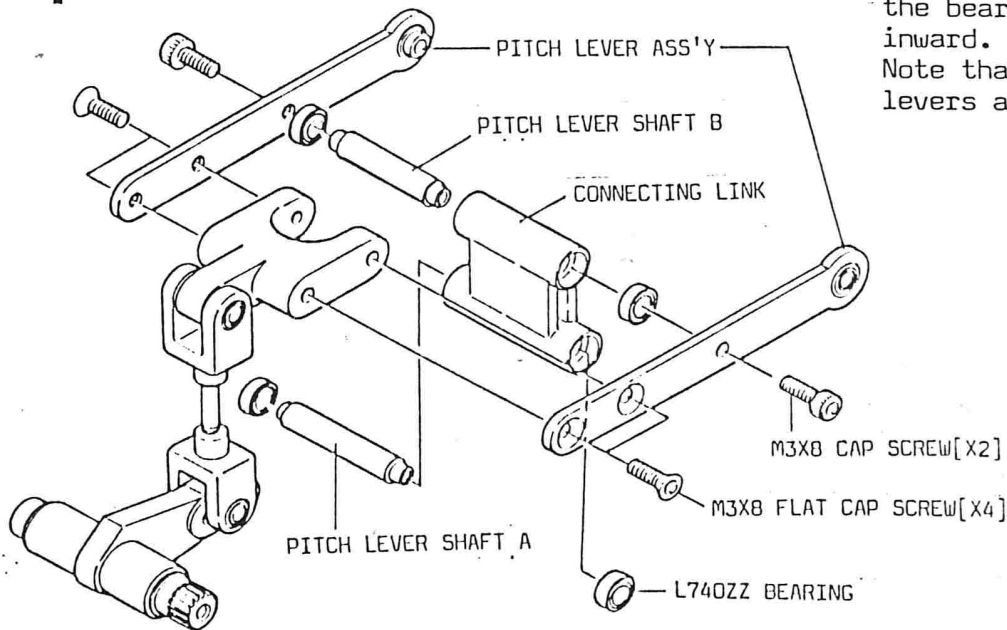
Install the ball bearing pitch assembly yokes onto the pitch link rod. Determine positions of pitch link pins and assemble as shown on sketch below. adjust the pitch link rod so that when pitch lever C is level, pitch lever B is also level.



* To insert pitch link pins, use a plastic or rubber mallet.



A1-4

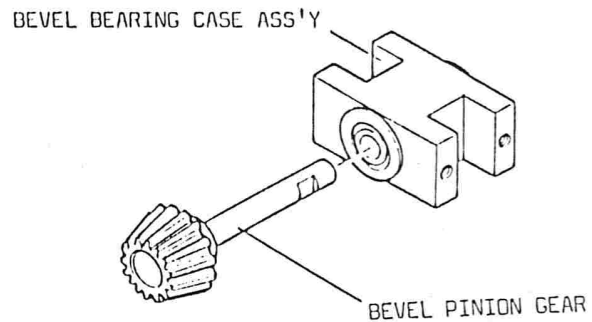


On the pitch lever A assembly, the flange of the bearings are faced inward. Note that left and right levers are parallel.



A1-5

Insert bevel pinion gear into bevel bearing case assembly. At this time, clean both with solvent and apply small amount of Kalttite making sure that the pinion gear shaft is fully inserted.

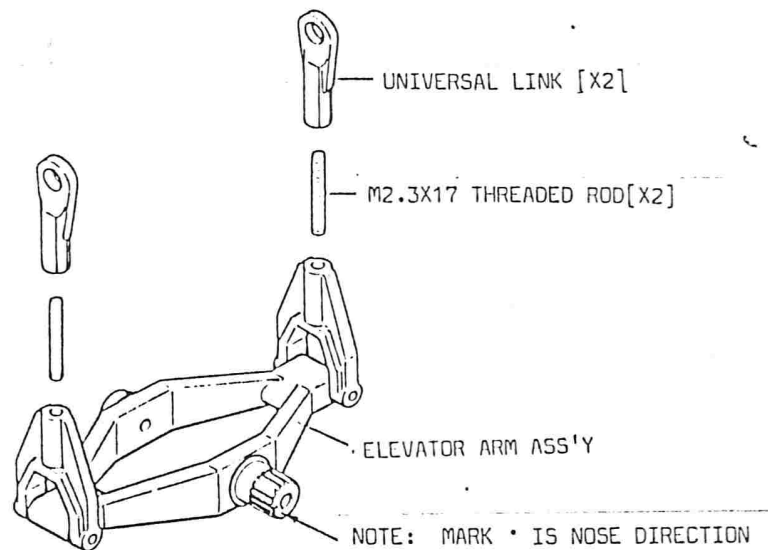


A1-6

Use M2.3X17 threaded ends rods and install universal links to elevator arm assembly.

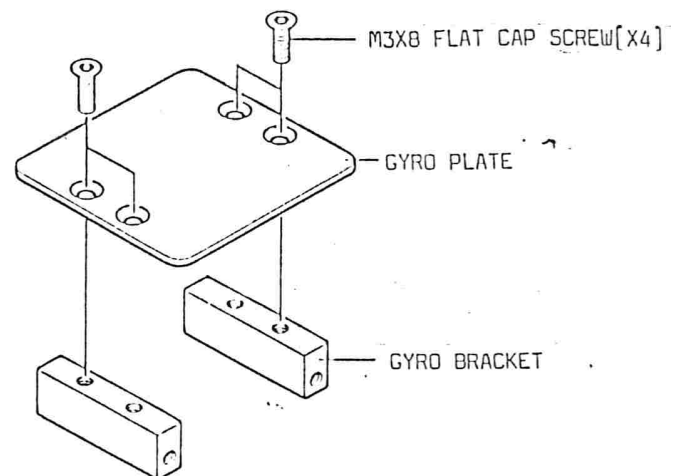
Caution:

Do not insert too tightly.



A1-7

Install gyro brackets to gyro plate temporarily. Secure in place when this assembly is installed onto side frames.



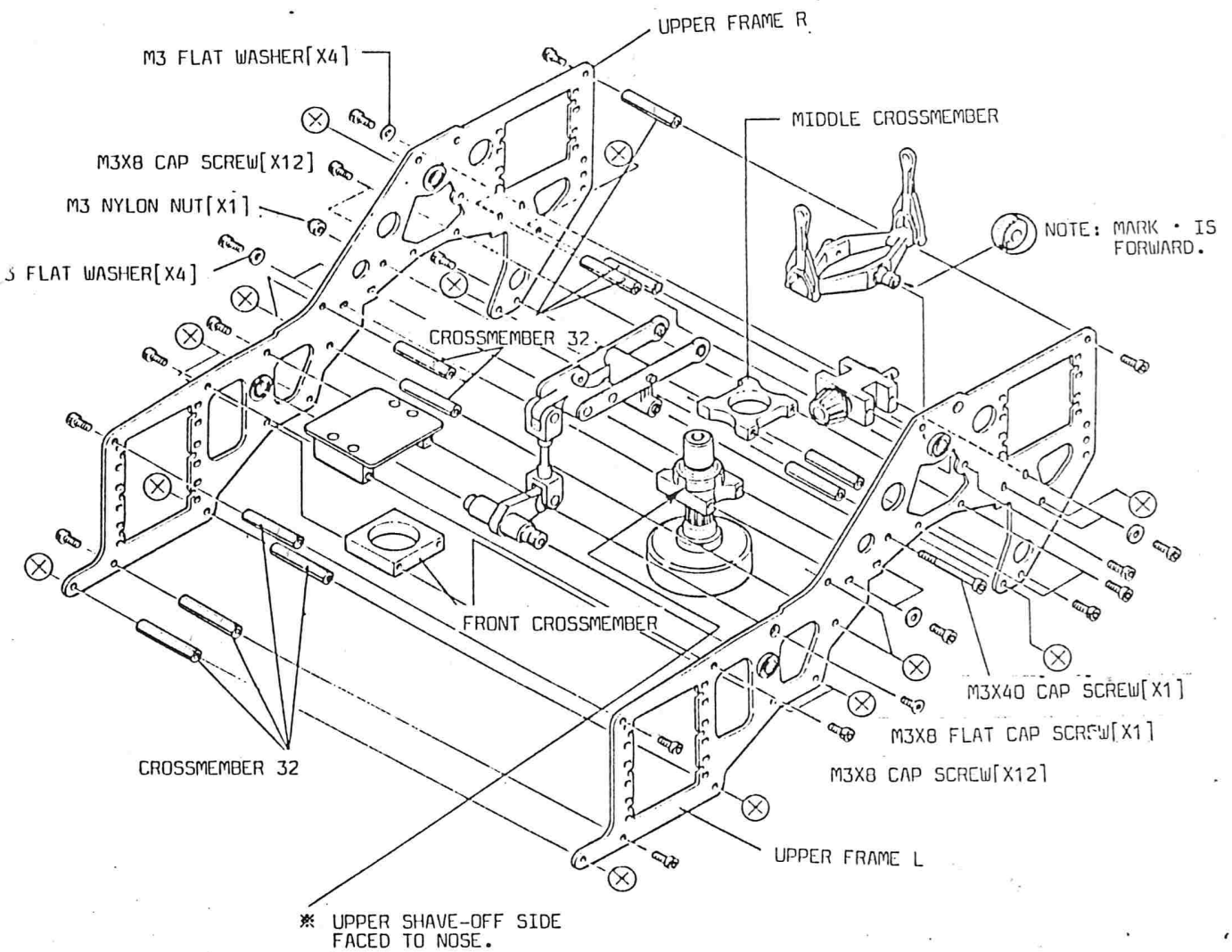
A2-1

Temporarily install parts assembled at Step A-1 onto frames. At this time, make sure that they are flush with the upper frame L left side.

Also use caution for directions when assembling elevator arm assembly, pinion bearing assembly and pitch lever C.

Install hex crossmembers (32mm) using M3x8 cap screws. Hex crossmembers marked X will not be secured to frame assembly until the lower frames are attached (Step A-3).

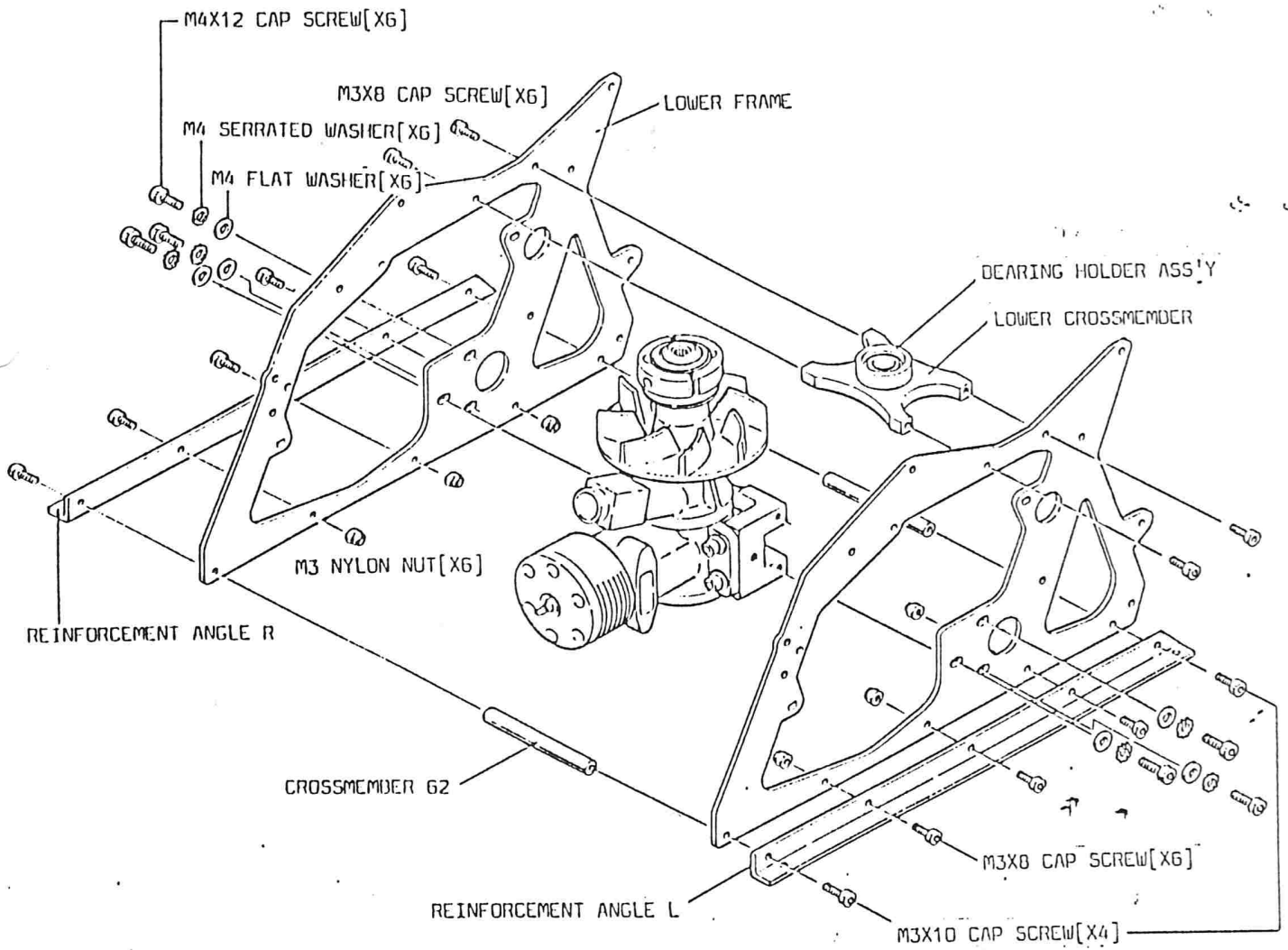
When securing gyro bracket, one screw is M3x8 flat cap screw.



A2-2

Install reinforcement angles to lower frame bottoms. Use caution as reinforcement angles have front/rear and left/right positions.

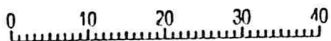
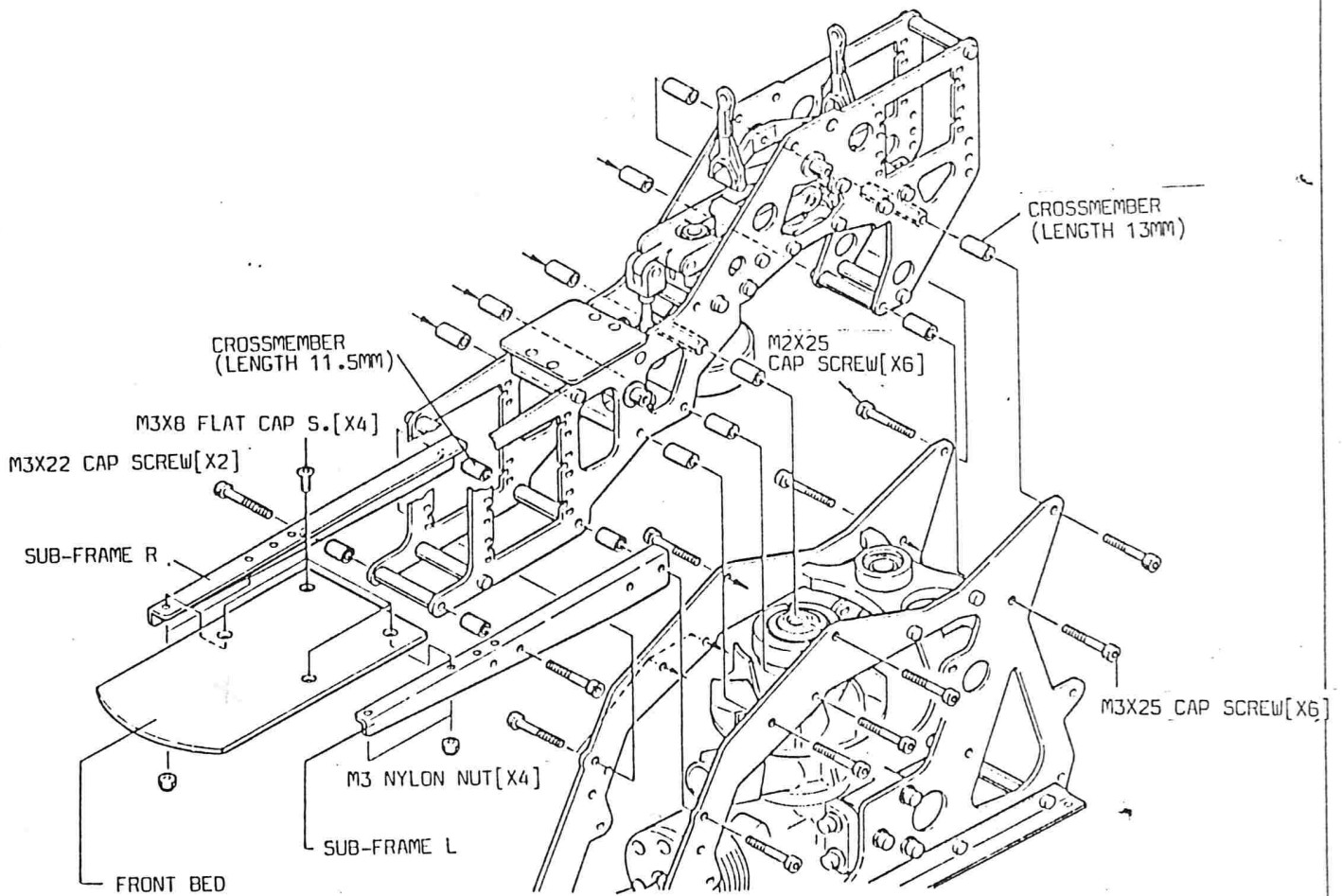
Place crossmember 62, lower crossmember and engine part between frames and temporarily fasten in place.



STEP A-2 ASSEMBLING THE MAIN FRAME

A2-3

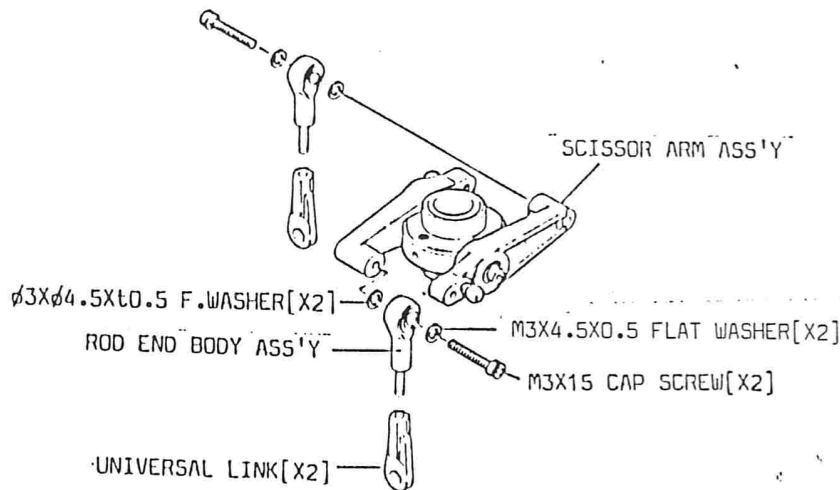
Attach temporarily assembled upper and lower frames. At this time, use caution that crossmember 13 (13mm) and crossmember 11.5 (11.5mm) are installed in their correct locations. Four (4) crossmembers are installed for sub-frames.



STEP A-3 MAIN SHAFT ASSEMBLY

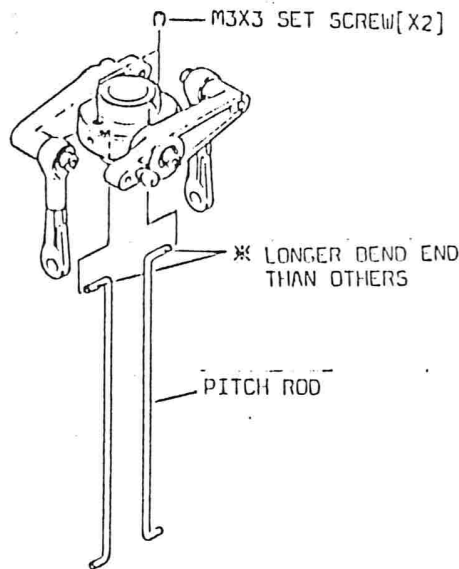
A3-1

Attach universal links to the rod end body assembly. At this time, universal links are at a 90° off-set to the rod end bodies.



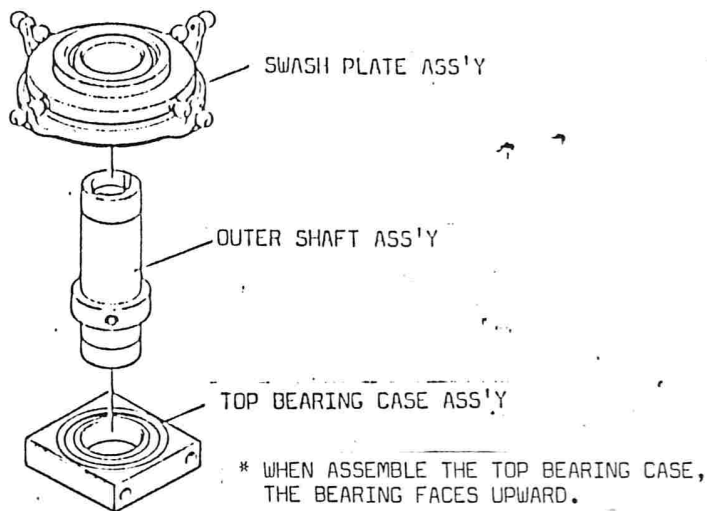
A3-2

Insert the pitch rods into the scissor arm assembly and secure tight with M3X3 set screws. At this time, make sure both ends of pitch rods are exactly bent 90°. If you find any burrs or flanges remove them with a file then insert. Make sure that the rods are firmly insert and secured tight with set screws.



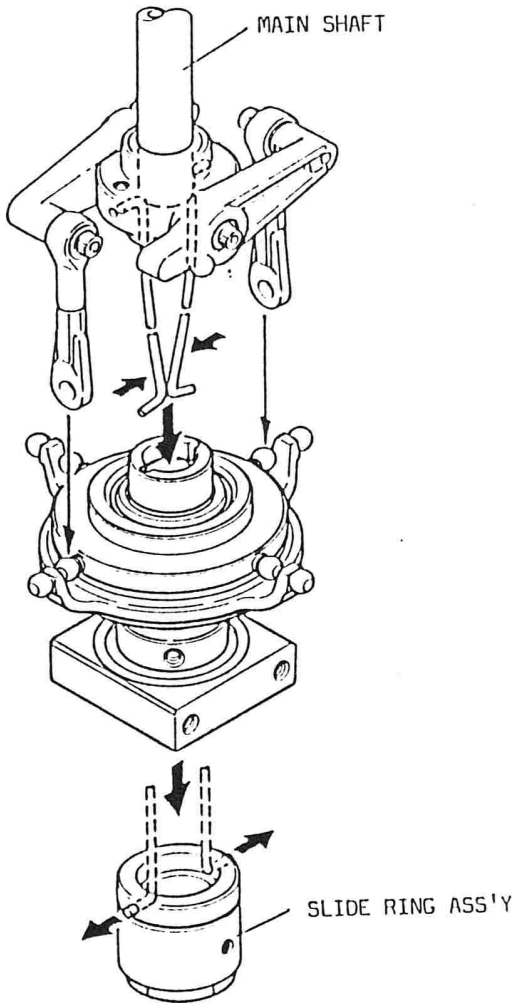
A3-3

Use caution for upper and lower directions, insert outer shaft assembly bottom (shorter) into top bearing case. Insert swash plate onto outer shaft top.



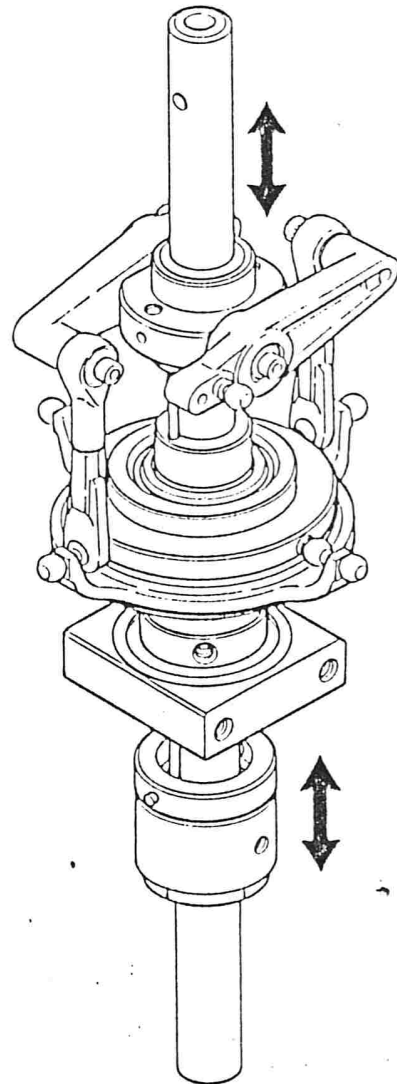
A3-4

Insert the main shaft into the scissor arm bottom, insert the pitch rod thru the outer shaft knotted sections then install the L bent sections of the rods into the slide ring assembly. Then the main shaft will move smoothly through the slide ring assembly.



A3-5

Move scissor arm section or slide ring section and make sure they are moving smoothly. If not moving smoothly, adjust pitch rod bend sections so they conform to the main rotor shaft.

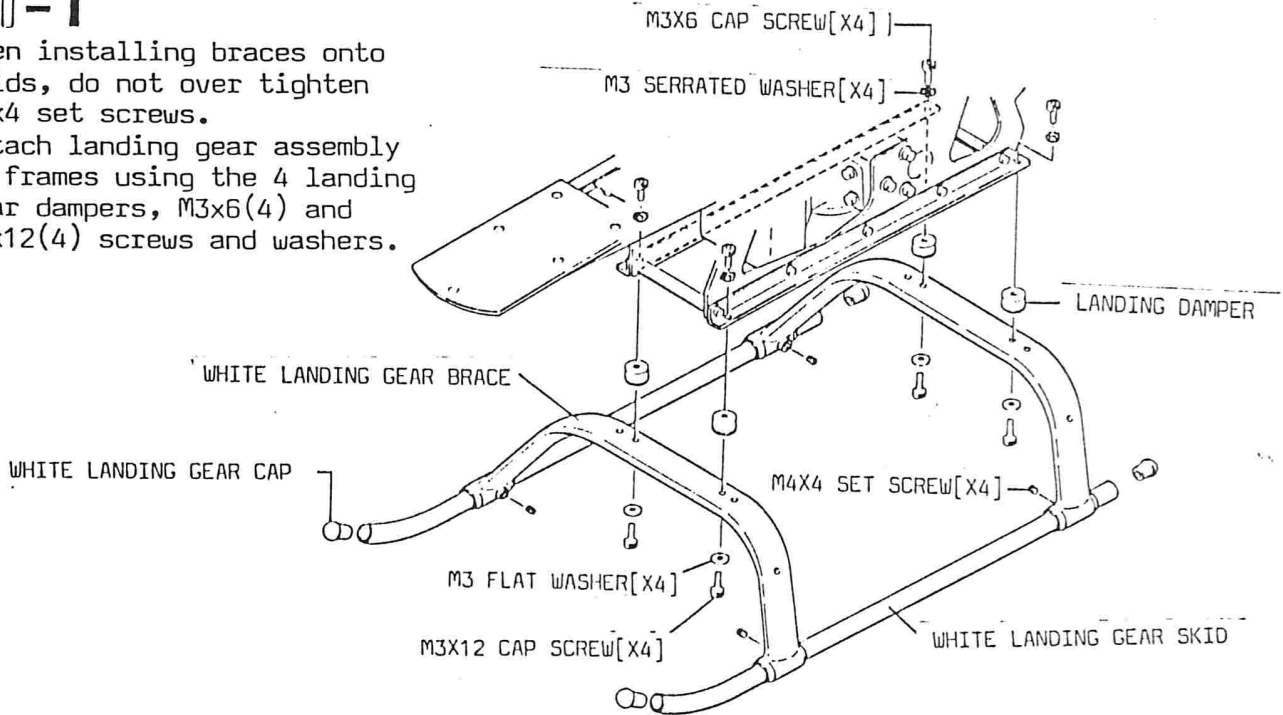


STEP B-1 LANDING GEAR ASSEMBLING

B1-1

When installing braces onto skids, do not over tighten M4x4 set screws.

Attach landing gear assembly to frames using the 4 landing gear dampers, M3x6(4) and M3x12(4) screws and washers.

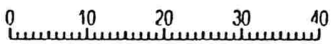
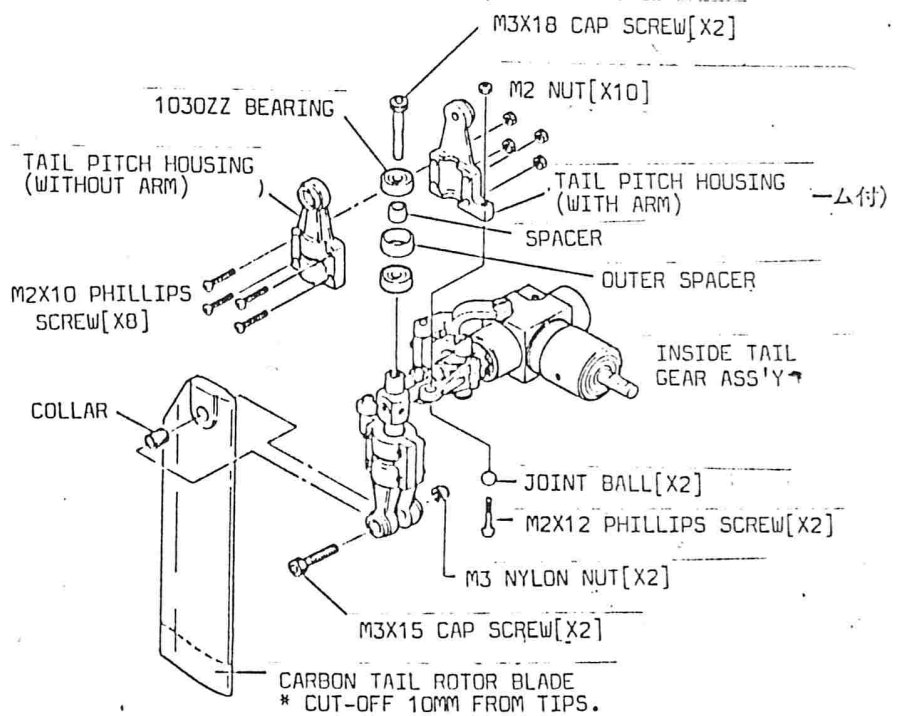


STEP B-2 TAIL SECTION ASSEMBLING

B2-1

As shown in the sketch, place spacer and outer spacer between two bearings and secure in place with M3x18 cap screw. Make sure that the screws are oil free and apply Kalt tite.

At this time, use caution that adhesives are not getting in to the bearings. Apply silicon grease into the inside of the tail gear housing.



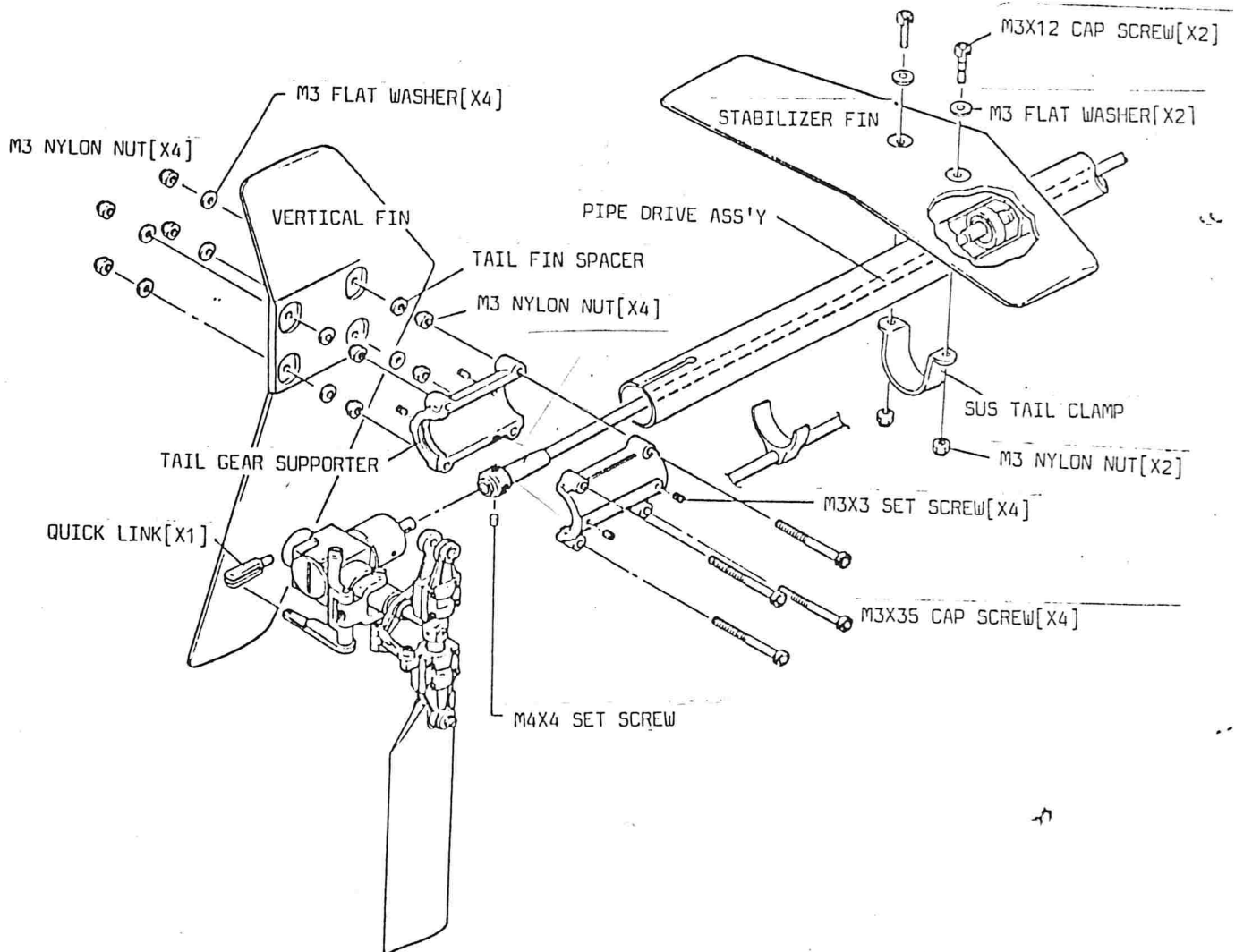
B2-2

Install the tube drive coupling to the tail gear box output shaft. Take care that the 4mm set screw contacts the flat spot on the output shaft.

Install the tube drive into the tail boom from the rear. Apply grease to the O-rings before installing.

Align the tail gear support inside knotch and the tail gear housing knotch. Insert the tail boom firmly and secure them in

place with M3x35 cap screws and M3 nylon nuts. Also secure tight M3x3 set screws for tail gear and tail boom. At this time, do not over tighten set screws. Using the tail fin spacers, install the vertical fin. Install the stabilizer fin at approximately 20cm forward of the tail gear housing. Do not over tighten screws and nuts while securing fins.



A3-6

Temporarily remove the lower main shaft bearing block and insert the pre-assembled gear section, and then re-install the lower main shaft bearing block.

Insert the pre-assembled main shaft into upper frames. Insert the main shaft into one-way autorotation shaft and secure in place with thrust bearing, shaft washer and shaft screw as shown.

Pull the shaft upward and press down on the outer shaft, then secure the shaft in place with four set screws.

Note that at this time, set screws are temporarily secured. At the time when rotor head is installed, make sure that the phase adjustment of the linkage rod coupling, control lever and swash plate are parallel against the main shaft.

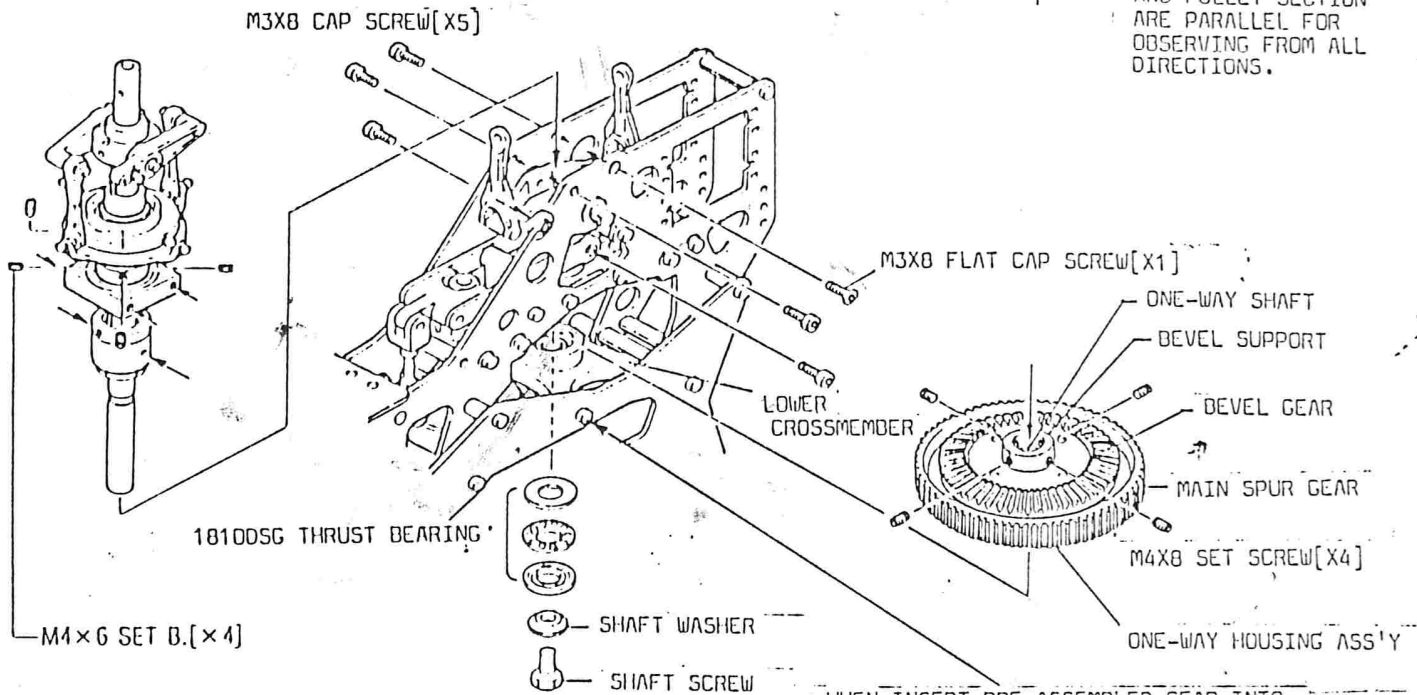
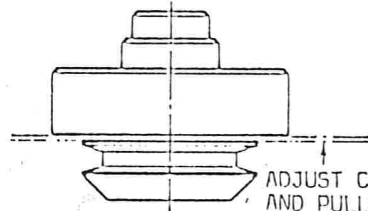
Make sure pre-assembled gear section can freely rotate when bevel gear is lightly press down, align one of set screw into shaft's [D] groove and secure tight all four set screws in place.

Now adjust backlash between the pinion gear and rotor drive gear.

Adjust pinion bearing case forward/backward position and make sure gears are rotating smoothly without backlash. Adjust bevel gear section in the same manner.

When determined the pinion bearing case position, adjust motor mount screws for clutch bell bottom and make sure the top of the fan is parallel and also left and right are parallel with the clutch bell.

At this time, set the starter shaft into the starter hex and observe that rotates smoothly by hand. When all adjustment are complete, remove all screws and apply Kalt-tite, then secure in place firmly. Note at this time, remove only one screw each time, apply Kalt-tite, then remove another screw and apply Kalt-tite, so every screws are secure tight in place without changing position.



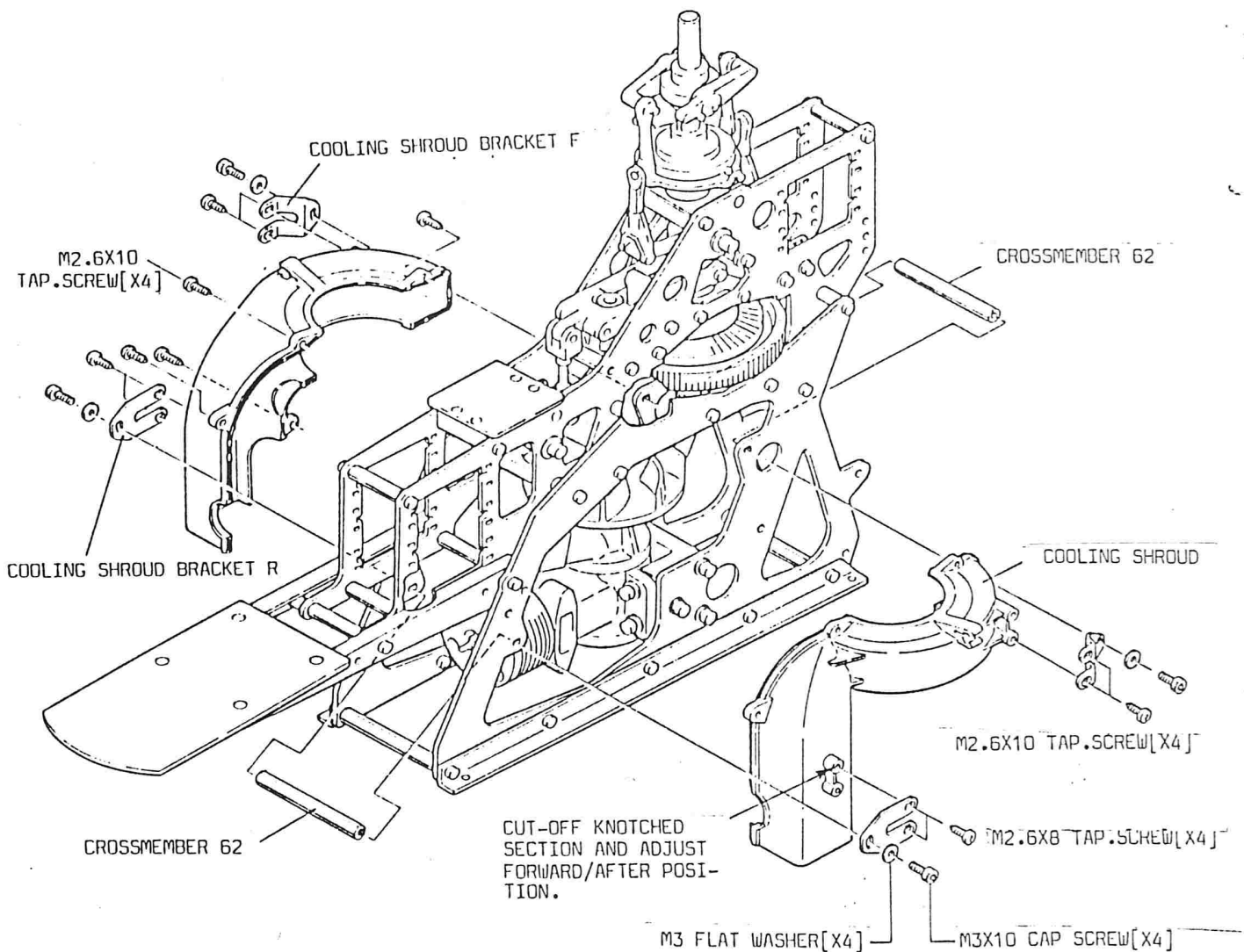
WHEN INSERT PRE-ASSEMBLED GEAR INTO FRAMES, REMOVE THESE SCREWS (LEFT/RIGHT 2 PCS.), LOWER CROSSMEMBER, THEN INSERT GEAR. BACK CROSSMEMBER IN PLACE AND SECURE TIGHT SCREWS.

A4-1

If the cooling shroud and the muffler touch, shave the part of the cooling shroud that contacts the muffler before securing in place.

When you use OS carburetor, the carburetor may touch the cooling shroud, at this time, adjust the cooling shroud to fit.

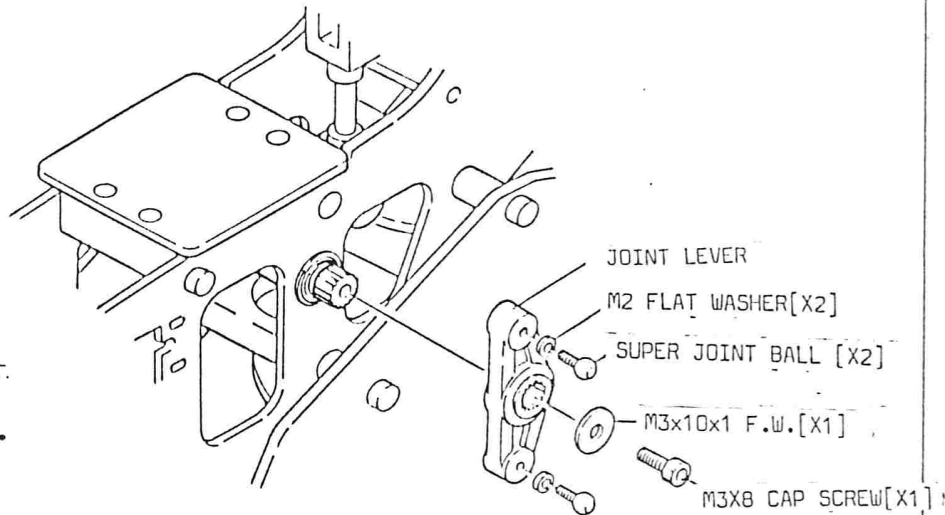
When installing the cooling shroud, make sure the cooling fan and shroud are not touching. Secure in place with Kalt-tite.



A5-1

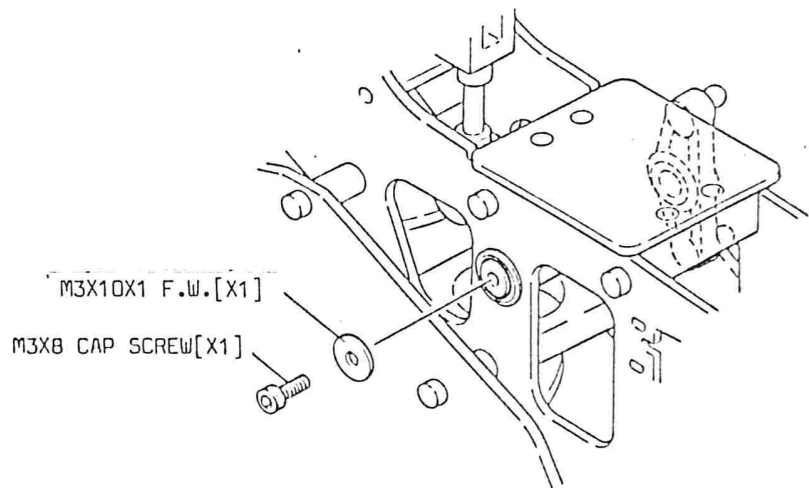
Attach the super joint balls into the joint lever with washers. Use caution when installing the joint lever as there is an inside and an outside. Please refer to the diagram for location. Do not over tighten the super joint balls.

Align the joint lever mark (±) with the pitch lever C left input shaft and slide in place. Secure with washer and cap screw as shown.



A5-2

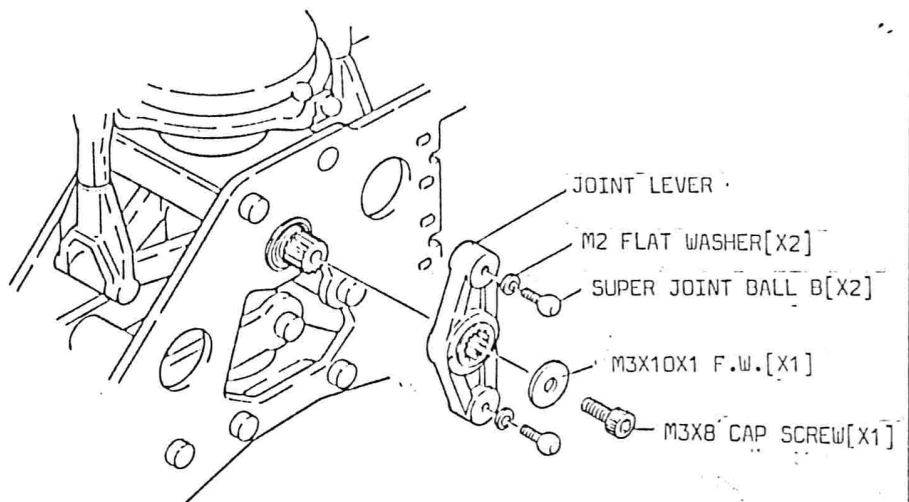
Pitch lever C right shaft is secured by washer and cap screw as shown.



A5-3

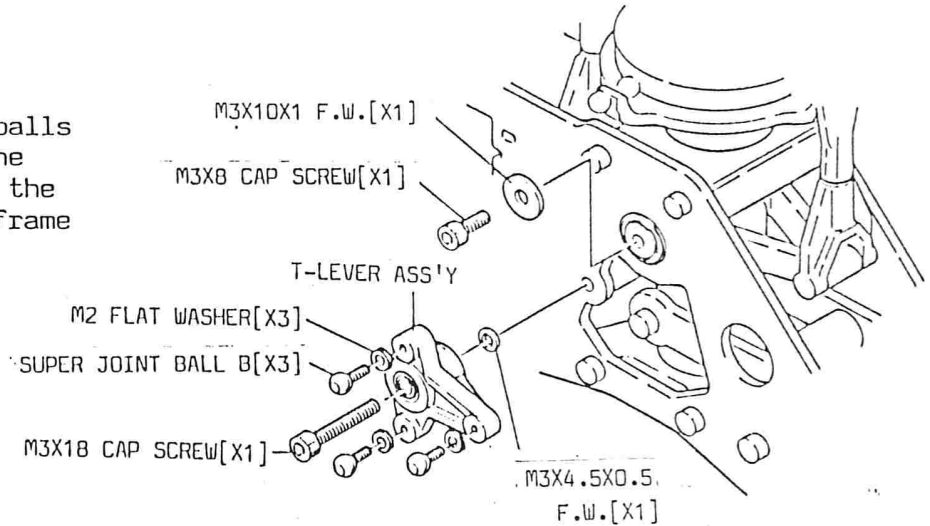
Install the second joint lever using the same procedure as in the Step A5-1.

Note that the lever direction is opposite to Step A5-1.



A5-4

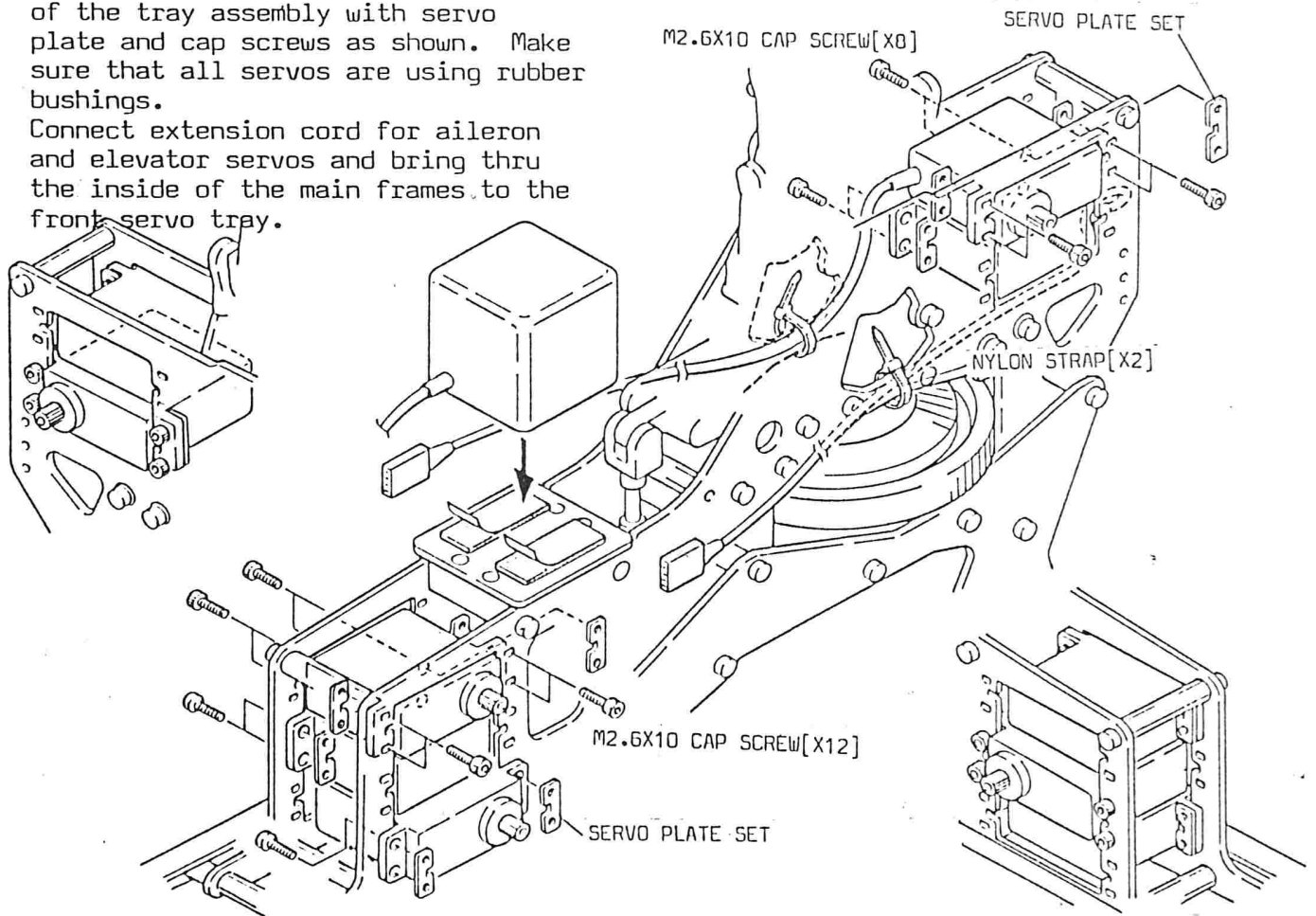
Install the super joint balls into the three holes of the T-lever assembly. Insert the washer between the upper frame and T-lever and secure in place.



A5-5

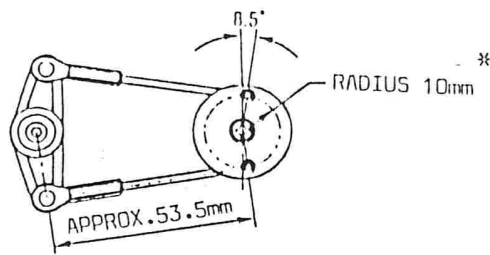
Install servos onto frames noting the servo output shaft directions. All servos except the throttle servo are secure on the inner side of the tray assembly with servo plate and cap screws as shown. Make sure that all servos are using rubber bushings. Connect extension cord for aileron and elevator servos and bring thru the inside of the main frames to the front servo tray.

At this time, make sure that the extensions are not routed close to gears, etc.

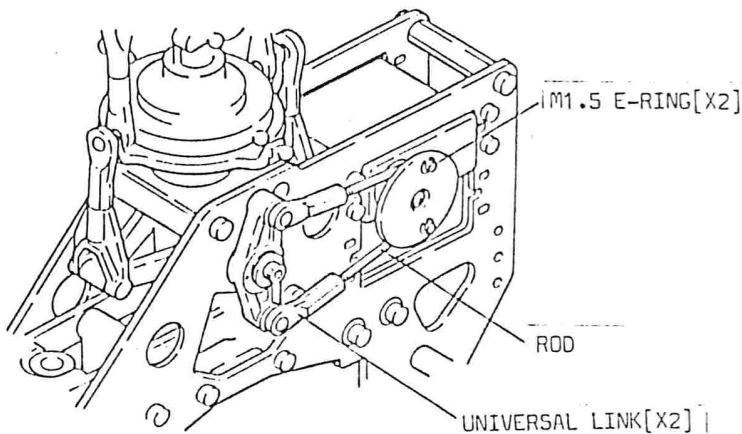


A6-1

Use round type servo horns for aileron, elevator and pitch controls. Install the servo horns onto servos and determine the neutral position of all servo's by turning transmitter and receiver powers on. Now drill 2mm holes using the gauge supplied. After drilling, install the rods and secure them in place with E-rings. Screw the universal links into the rod ends and adjust the two rods so they are of equal length and connect to the joint balls.

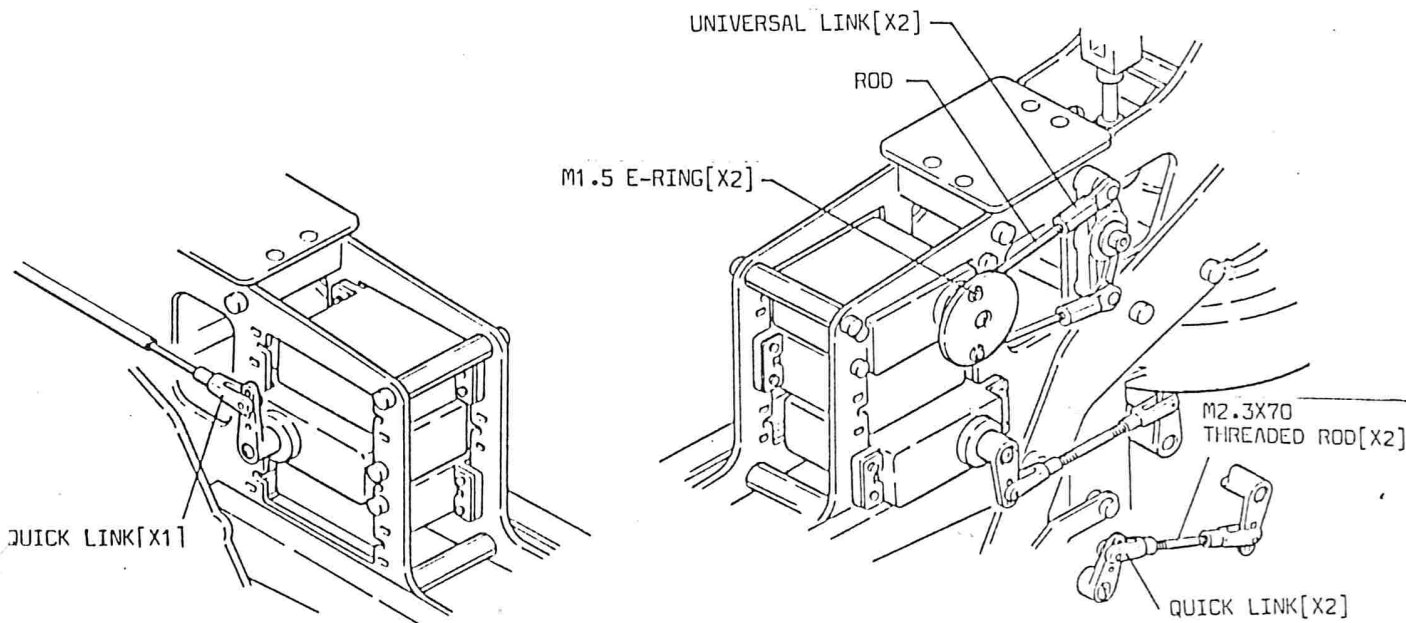
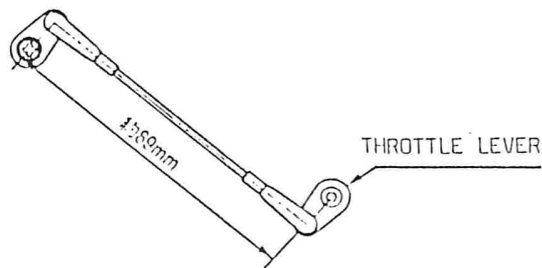


* When installing the rods into the servo horns, first determine the best side of horn to use as the height of the servos differ by manufacturer.



A6-2

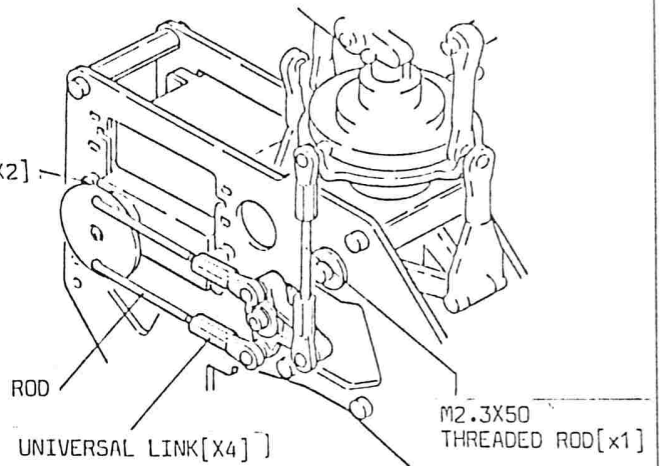
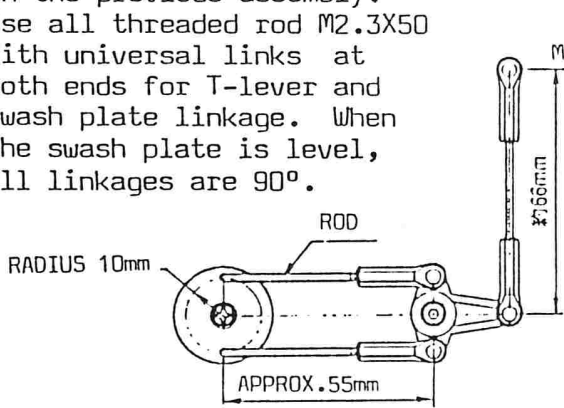
The throttle and rudder linkages are made using the quick links supplied. Use either 4 prong or 2 prong style servo horns and cut-off the unnecessary sides. Note that the rods and horns are always at 90° angles.



STEP A-6 LINKAGES

A6-3

The linkage adjustment and installation of servo horn and T-lever is the same as in the previous assembly. Use all threaded rod M2.3X50 with universal links at both ends for T-lever and swash plate linkage. When the swash plate is level, all linkages are 90°.

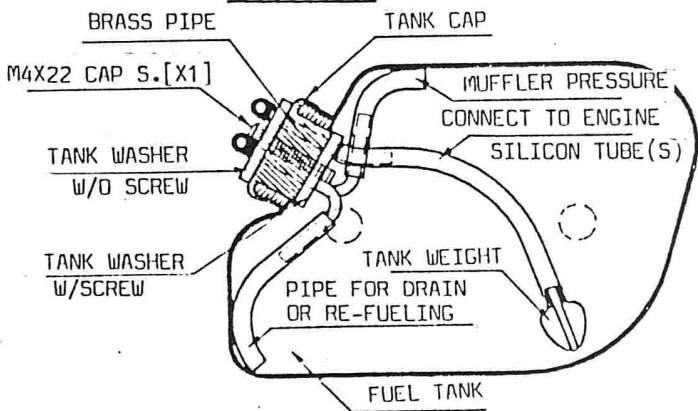


STEP A-7 ASSEMBLING FUEL TANK AND BRACKET INSTALLATION

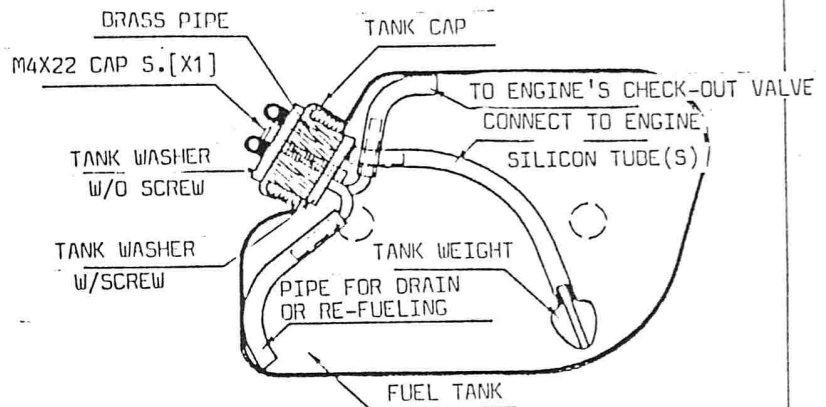
A7-1

Place the tank washer between the tank cap and the fuel tank. Insert the brass pipes and secure in place with the cap screw. Install the tank clunk as shown with silicon tube (small), connect the remain tubes as shown in the diagam that pertains to your specific engine. Install the assembled fuel tank cap section in place and secure in place.

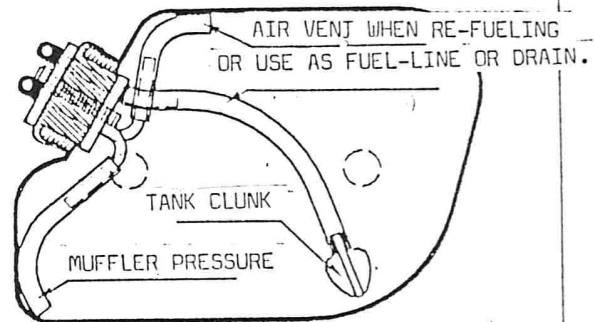
WHEN INSTALL ENYA, OS ENGINES
VERSION 1



WHEN INSTALL YS ENGINE



WHEN INSTALL ENYA, OS ENGINES
VERSION 2

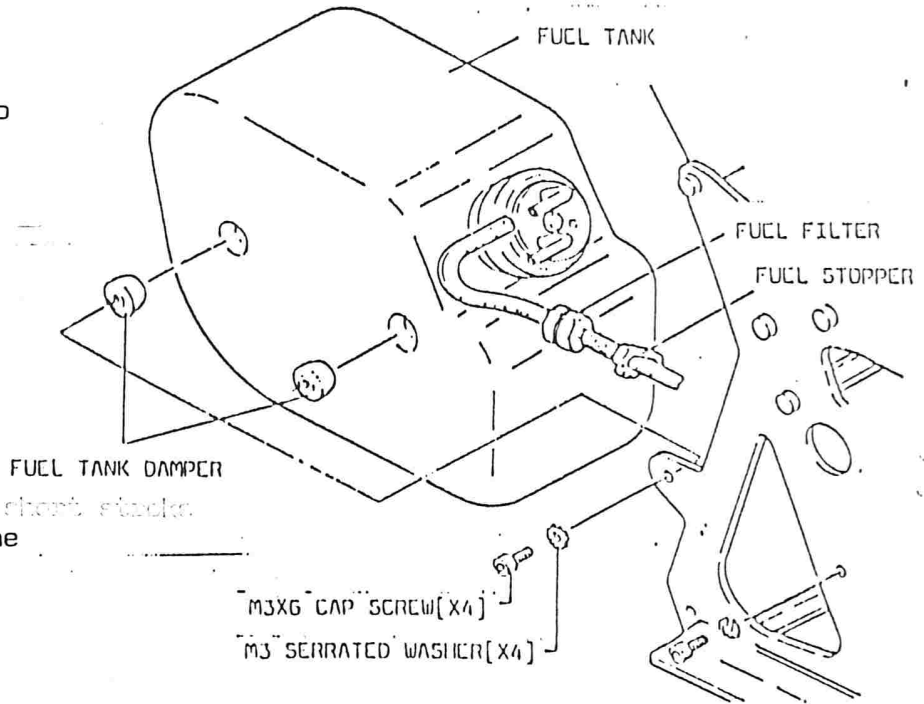


INSTALL THE FUEL STOPPER BETWEEN MUFFLER AND THE TANK AND CLOSE STOPPER WHEN RE-FUELING.



A7-2

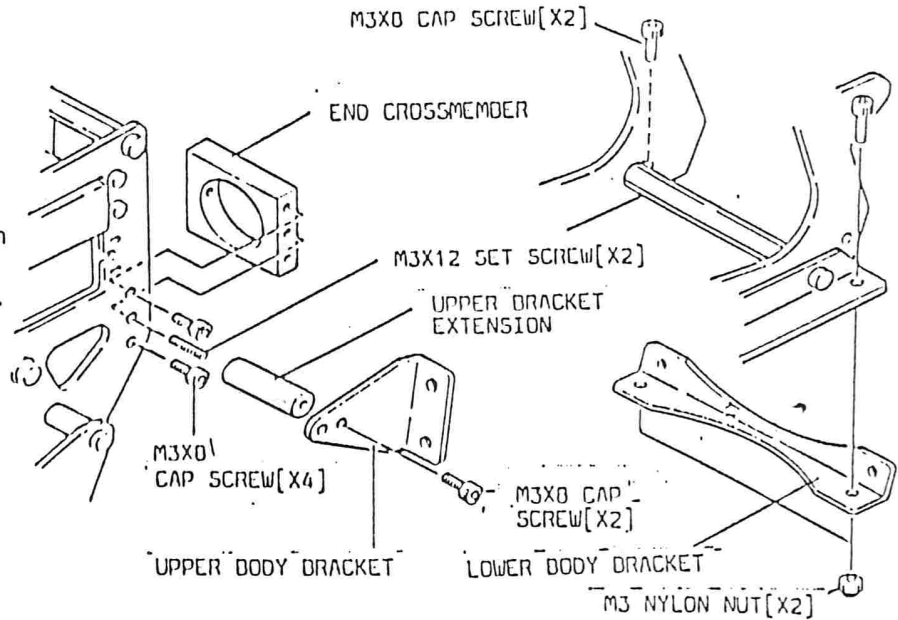
Press in tank damper to pre-assembled tank. Align dampers to lower frame holes and secure in place with serrated washers.



When installing the YS short stroke engine, the regulator and the fuel tank washer may touch. If so you will need to file the tank washer for clearance.

A7-3

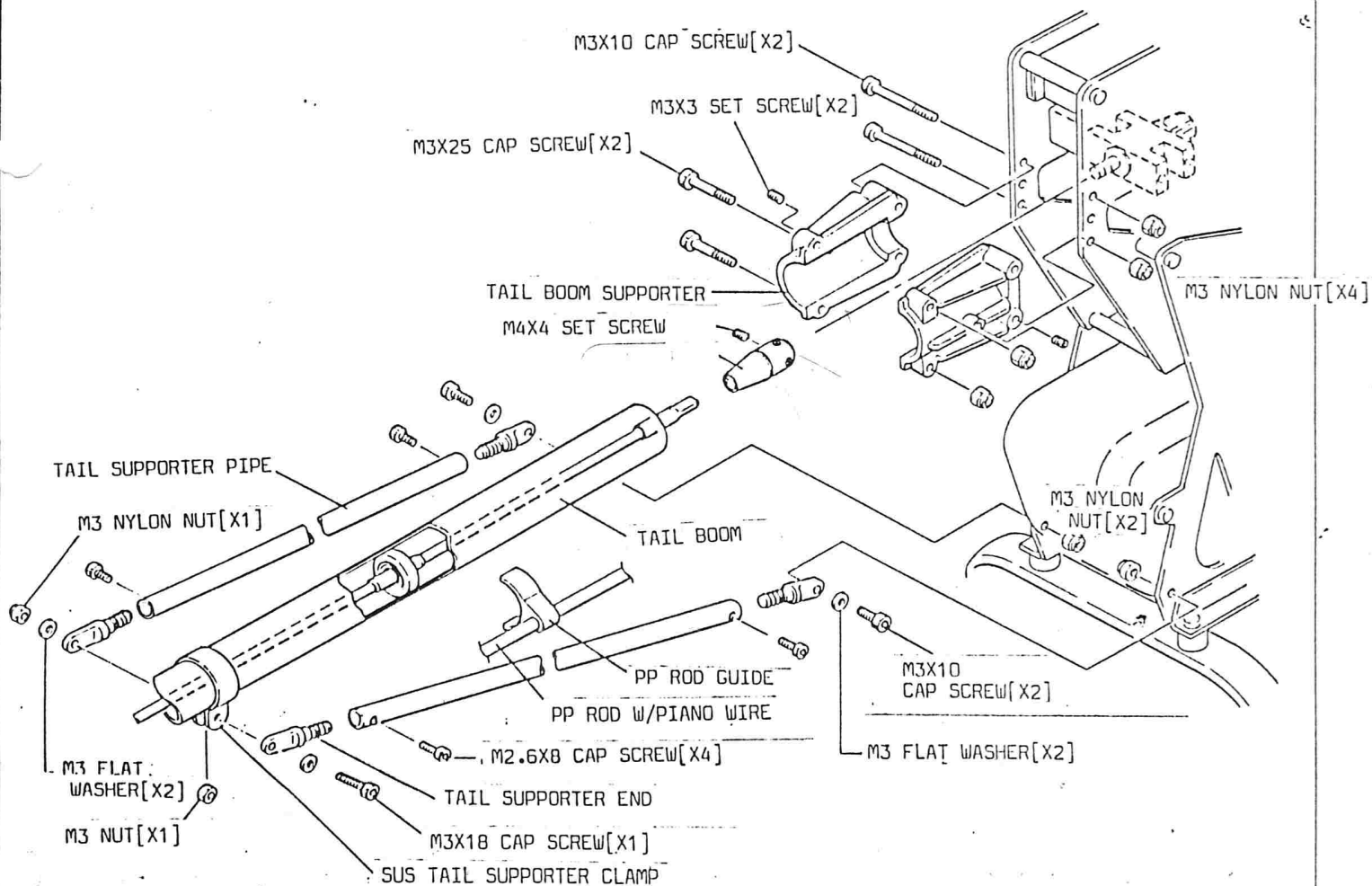
When you build full kit, please disregard this column. This column is used only when you are install the mechanics set into a fuselage. Prior to assembly the set screws are screwed-in prior to installing the upper bracket extensions.



B2-3

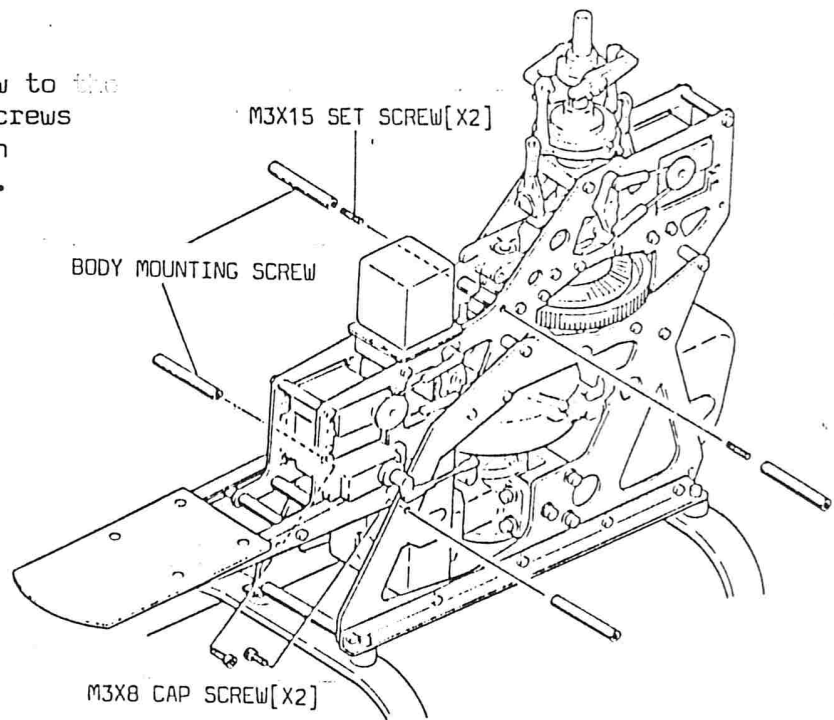
Install the 2nd tube drive coupling onto the tail pinion assembly. Also take care that the M4x4 set screw contacts the flat spot on the pinion shaft. Temporarily install the tail boom support to the upper frames. Insert the tail support ends to the tail supporter pipes and secure in place with cap screws. The assembled tail supporter pipes are now installed onto the lower frame bottom.

Install the tail supporter clamps into the tail boom. Align the tail boom tip's joint knotch and joint F knotch and then insert the tail boom support. Temporarily screw tight one side of the tail supporter pipe and supporter clamp. Align so the main shaft, tail fins, or tail gear housing installation angles are either 90° or parallel and then secure the temporarily installed screws. Insert PP rod into PP rod guides then screw on the quick links to both ends of the rods. At this time, make sure that the PP rod is not warped. If necessary use extra PP rod guides.



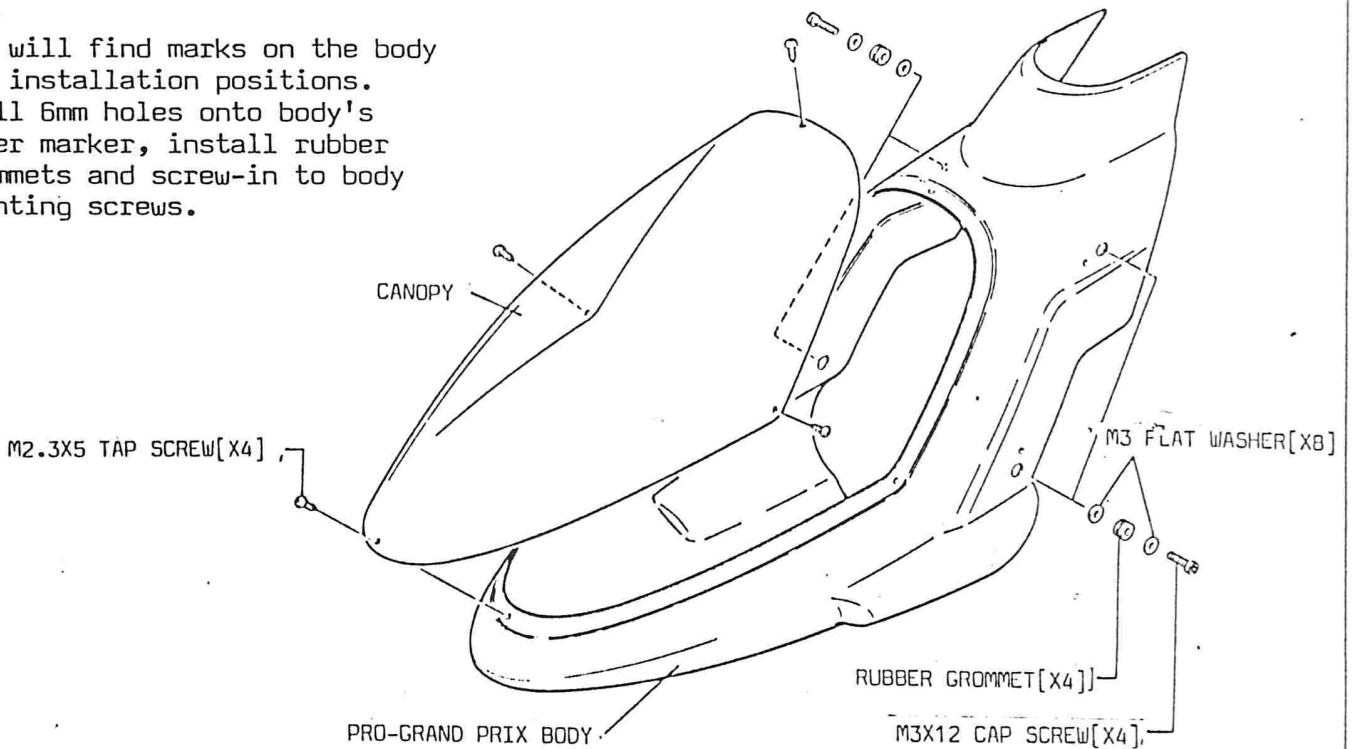
B3-1

Install the body mounting screw to the frames. Install the set screws into the rear body mounts, then screw-in to the crossmember 32.



B3-2

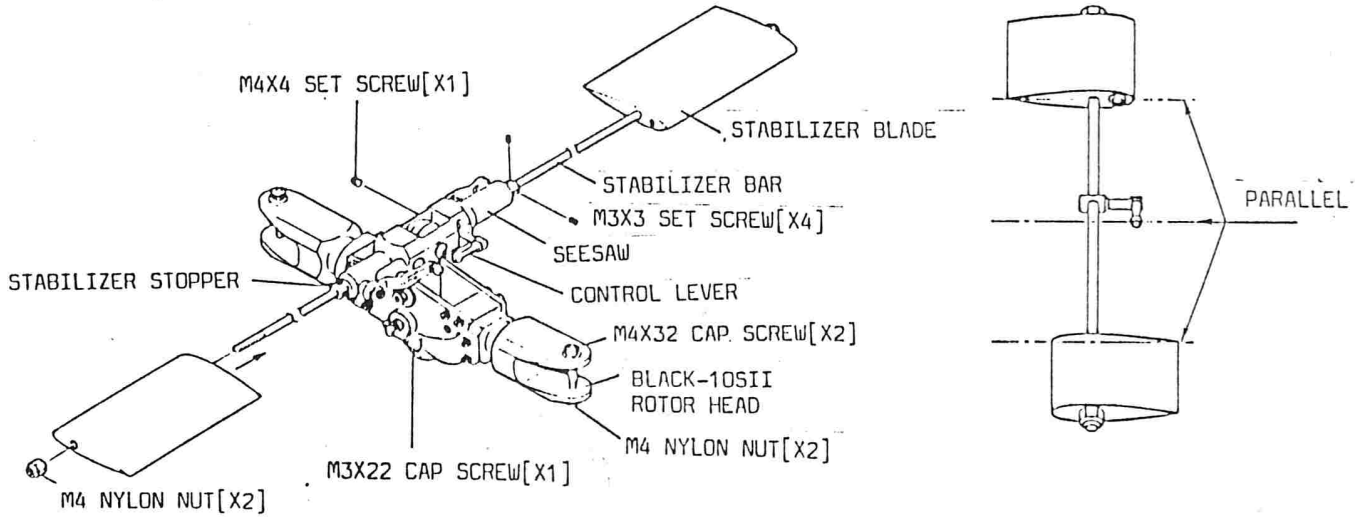
You will find marks on the body for installation positions. Drill 6mm holes onto body's lower marker, install rubber grommets and screw-in to body mounting screws.



B4-1

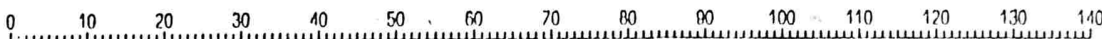
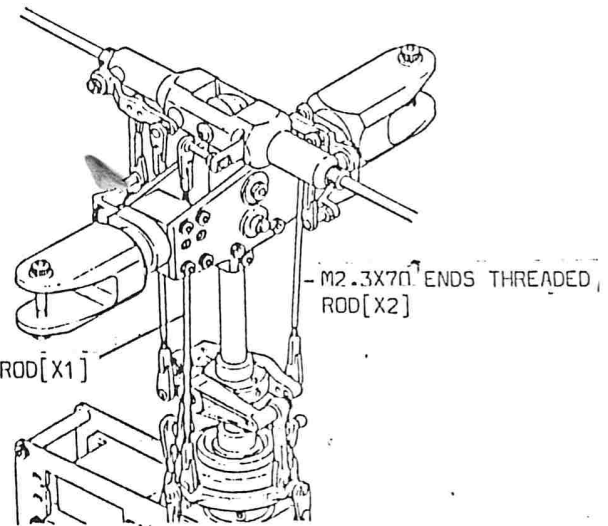
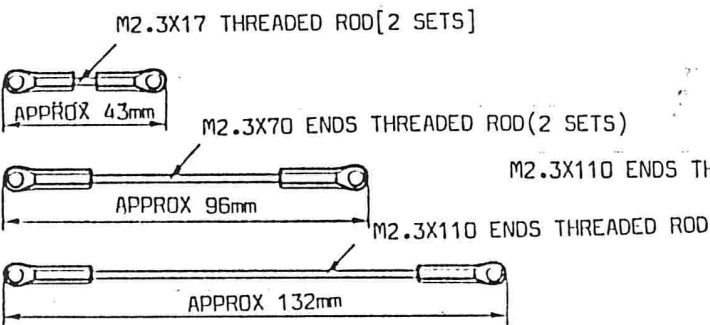
Note that stabilizer blade weights are adjustable. Please refer to the stabilizer assembly instructions for clarification. Set control lever for the seesaw, insert thru stabilizer bar and secure the stabilizer bar in place with the stabilizer collars. Use caution for direction.

Install the stabilizer blades to both ends of stabilizer bar. At this time, the bar is approx. 5mm from the end of the stabilizer blades and secure in place with nylon nut. Make sure blades are same distance from the center of the rotor head and that they are both parallel.



B4-2

Fabricate each linkage as shown. Regarding the rotor head adjustments, please refer to the rotor head instructions. For installation of the main rotor blades, install blade grip spacers and secure in place with screws and nuts.



AFTER CONSTRUCTION CHECK LIST

Upon completion of this kit, go back over every step to make sure that there are no loose nuts or screws, misaligned or bound moving components. Check all linkages for proper movement using your transmitter.

Center of Gravity Adjustment

This adjustment is very critical. Lift helicopter by holding onto the flybar. It will hang nose-low without fuel. The rear skids will raise off the ground approx. 3/8" before the front skid lift.

Note: If weight is needed, we recommend extending the radio bed using a 3/32 to 1/8 inch plywood tray. Move the receiver and battery pack forward until the proper center of gravity is achieved.

Main and tail rotor Pitch adjustment

Follow the instructions for your rotor head. Pitch may vary according to such factors as total weight, engine power, main blade diameter and your own preferences.

For the initial set-up, we recommend that you set main rotor a pitch of 0 degrees at minimum power and approx. 8 degrees at maximum power. Tail rotor pitch is recommend +5° at the rudder stick and the throttle stick are neutral.

In-Flight Adjustment

Range check your R/C equipment prior to start the engine.

Tracking of Main Rotor Blades.

Gradually open up the throttle, and when the helicopter is almost to lift off, watch the rotor blades to see if they are tracking the same. If not, adjust the pitch of one blade, so that then, they will both track the same.

Needle Valve Adjustment

Adjust mixture control screw and needle valve according to the manufacturer's instructions. If, after your first flight, fine adjustment is required, make sure that it is not adjusted too lean.

Tail Rotor Pitch

Face the helicopter into the wind, and gradually open the throttle. If the tail boom moves to the right (nose moving left), increase the pitch, and if it moves the opposite direction, decrease the pitch. To adjust the tail mixing system of your transmitter, refer to the manufacturer's instructions.